



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

COMPLIMENTS OF

INDIANA-

STATE BOARD OF AGRICULTURE.

ALEX. HERON, SECRETARY.

Exchanges Acceptable.

INDIANAPOLIS, IND.

59
A5

THIRTY-NINTH ANNUAL REPORT

OF THE

INDIANA

State Board of Agriculture.

A. L. Roache

VOLUME XXXI-1889-1890.

INCLUDING THE PROCEEDINGS OF THE ANNUAL MEETING, 1890; FARMERS STATE
INSTITUTE, MEETING OF CATTLE BREEDERS, HORSE BREEDERS, SWINE
BREEDERS, POULTRY BREEDERS, WOOL GROWERS, BEE-
KEEPERS, CANE GROWERS, FISH AND GAME ASSO-
CIATION AND STATE FLORISTS, 1890.

TO THE GOVERNOR.

INDIANAPOLIS:

WM. B. BURFORD, CONTRACTOR FOR STATE PRINTING AND BINDING.
1890.

INDIANAPOLIS, May 1, 1890.

HON. ALVIN P. HOVEY,
Governor of Indiana:

SIR—In compliance with the act of the General Assembly, approved February 17, 1852, we have the honor to submit to you herewith the Annual Report of the Indiana State Board of Agriculture for the year ending December 31, 1889, together with such matter as is deemed interesting and useful.

Very respectfully,

JASPER N. DAVIDSON, President.

ALEX. HERON, Secretary.

THE STATE OF INDIANA,
EXECUTIVE DEPARTMENT,
INDIANAPOLIS, May 3, 1890. }

Received by the Governor, examined and referred to the Auditor of State for verification of the financial statements.

OFFICE OF AUDITOR OF STATE,
INDIANAPOLIS, May 10, 1890. }

The financial part of the within report, so far as it relates to money drawn from the Treasury, has been examined and found correct.

BRUCE CARR, Auditor of State.

Returned by the Auditor of State, with the above certificate, and transmitted to the Secretary of State for publication, upon the order of the Board of Commissioners of Public Printing and Binding.

WILLIAM B. ROBERTS, Private Secretary.

Filed in the office of the Secretary of State of the State of Indiana, May 12, 1890.

CHARLES F. GRIFFIN, Secretary of State.

CONTENTS.

	PAGE.
Record Table	6
Officers State Industrial Associations	7
Meteorological Tables.	8
Constitution and Laws	14
Statistics of Crops	17-58
Proceedings February and Summer Meetings	60
Proceedings Annual Meeting, 1890	70
Address by Hon. A. P. Hovey, Governor of Indiana	88
Reports of Department Superintendents	81-87
Discussion of "Contagious Animal Diseases."	89
Report of Committee on Farmers' Institutes	99
Discussion—"Is a Speed Programme Essential to a Successful Fair?" . . .	104
Award of State Fair Premiums	112
Classified Exhibits	157
Report of State Chemist on Commercial Fertilizers	166
Address—"The Past, Present and Future of Indiana as an Agricultural and Manufacturing State," by W. B. Seward	174
"Kind of Apples to Grow in Indiana," by R. M. Lockhart	181
"Keeping the Boys on the Farm," by D. L. Thomas	187
"What Fiber Can be Grown by Indiana Farmers as a Successful Substitute for Sisal or Manilla," by J. Q. A. Sieg	192
"Farming in Palestine," by Rev. Dr. J. S. Jenckes	194
"Profits and Pleasures of Professional and Farm Life Compared," by Judge J. N. Hadley, Danville.	199
"Silk Culture," by Mrs. Catherine Mick.	204
"Home, Mind and Social Interests," by Miss Ida F. Richardson, of Marion County	206
"Plowing," by a Practical Farmer	211
"Grasses of Indiana," by Prof. J. Troop.	213
Farmers' Institute, "Round Up" for State	245
Counties of Indiana, How Named	343
Reports of County and District Societies	345
Table of Officers, Entries, Premiums, Receipts, etc., of County and District Societies	397-408
Proceedings of Indiana Shorthorn Breeders.	409
Jersey Breeders	441
Trotting and Pacing Horse Breeders	470
Swine Breeders.	485
Indiana Wool Growers	502
Indiana Poultry Breeders	533
Indiana Bee-Keepers	546
Indiana Fish and Game Convention	565
Indiana Cane Growers	592
Indiana State Florists	609

MEMBERS OF THE INDIANA STATE BOARD OF AGRICULTURE, 1889.

- 1st District—ROBERT MITCHELL, Princeton, Gibson County.
 - 2d District—W. W. BERRY, Vincennes, Knox County.
 - 3d District—J. Q. A. SIEG, Corydon, Harrison County.
 - 4th District—W. B. SEWARD, Bloomington, Monroe County.
 - 5th District—V. K. OFFICER, Volga, Jefferson County.
 - 6th District—DICK JONES, Columbus, Bartholomew County.
 - 7th District—E. H. PEED, New Castle, Henry County.
 - 8th District—S. W. DUNGAN, Franklin, Johnson County.
 - 9th District—THOMAS NELSON, Bloomingdale, Parke County.
 - 10th District—J. N. DAVIDSON, Whitesville, Montgomery County.
 - 11th District—LLOYD S. JONES, Warren, Huntington County.
 - 12th District—JOHN M. BOGGS, Lafayette, Tippecanoe County.
 - 13th District—B. F. CLEMANS, North Manchester, Wabash County.
 - 14th District—J. A. MCCLUNG, Rochester, Fulton County.
 - 15th District—W. A. BANKS, Laporte, Laporte County.
 - 16th District—R. M. LOCKHART, Waterloo, Dekalb County.
-

OFFICERS FOR 1889.

HON. JASPER N. DAVIDSON	President.
W. A. BANKS	Vice-President.
ALEX. HERON	Secretary.
SYLVESTER JOHNSON	Treasurer.
CHAS. E. MERRIFIELD	General Superintendent.

EXECUTIVE COMMITTEE.

R. M. LOCKHART,	W. B. SEWARD,
ROBERT MITCHELL,	E. H. PEED.

BOARD OF AGRICULTURE.

A TABLE Showing the Officers, Place and Receipts of Each Fair Held by the State Board of Agriculture.

Year	PRESIDENT.	SECRETARY.	TREASURER.	GENERAL SUPERINTENDENT.	PLACE OF FAIR.	PREMIUMS PAID.	RECEIPTS OF FAIR.
1852	Gov. Joseph A. Wright	John B. Dillon	Royal Mayhew	W. T. Dennis	Indianapolis		\$4,651 55
1853	Gov. Joseph A. Wright	John B. Dillon	Royal Mayhew	J. J. Bingham	Lafayette		6,751 55
1854	Gov. Joseph A. Wright	Wm. T. Dennis	Royal Mayhew	W. T. Dennis	Madiam.		7,430 77
1855	Gen. Joseph Orr.	John B. Dillon	S. A. Buell.	Calvin Fletcher, Jr.	Indianapolis	\$2,753 00	10,823 75
1856	Dr. A. C. Stevenson	Ignatius Brown	S. A. Buell.	Calvin Fletcher, Jr.	Indianapolis	4,225 00	14,373 34
1857	Dr. A. C. Stevenson	Ignatius Brown	S. A. Buell.	Calvin Fletcher, Jr.	Indianapolis	4,127 00	14,058 75
1858	Dr. A. C. Stevenson	John B. Dillon	Thomas H. Sharp	Calvin Fletcher, Jr.	Indianapolis		11,500 00
1859	George D. Wagner.	John B. Dillon	Thomas H. Sharp	James L. Bradley	New Albany.	6,163 00	8,589 50
1860	George D. Wagner.	Wm. T. Dennis	Thomas H. Sharp	James L. Bradley	Indianapolis	3,827 09	11,902 00
1861	D. P. Holloway	Wm. T. Dennis	H. A. Fletcher.		No Fair		
1862	James D. Williams	W. H. Loomis	H. A. Fletcher.	J. A. Grosvenor	Indianapolis	3,984 00	4,127 55
1863	A. D. Hamrick	W. H. Loomis	H. A. Fletcher.	J. A. Grosvenor	Indianapolis		9,559 36
1864	Stearns Fisher.	W. H. Loomis	Francis King	W. H. Loomis	Indianapolis	4,121 00	10,785 50
1865	Stearns Fisher.	W. H. Loomis	Carlos Dickson	J. A. Grosvenor	Fort Wayne	4,078 00	11,597 55
1866	Stearns Fisher.	W. H. Loomis	Carlos Dickson	J. A. Grosvenor	Indianapolis		17,179 36
1867	A. D. Hamrick	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Terre Haute	6,331 00	17,148 05
1868	A. D. Hamrick	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Indianapolis	7,087 00	16,799 00
1869	A. D. Hamrick	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Indianapolis	7,517 00	22,345 65
1870	J. D. Williams	Joseph Poole	Carlos Dickson	J. S. Benson.	Indianapolis	7,914 00	19,155 23
1871	J. D. Williams	Joseph Poole	Carlos Dickson	Jacob Mutz	Indianapolis	8,564 00	20,549 90
1872	John Sutherland	Alex. Heron	Carlos Dickson	H. W. Caldwell	Indianapolis	9,619 20	23,484 35
1873	John Sutherland	Alex. Heron	Carlos Dickson	H. W. Caldwell	Indianapolis	8,864 75	52,309 10
1874	John Sutherland	Alex. Heron	Carlos Dickson	E. J. Howland.	Indianapolis	10,754 00	45,380 48
1875	William Crim	Alex. Heron	Carlos Dickson	E. J. Howland.	Indianapolis	12,068 20	43,214 99
1876	Hezekiah Caldwell	Alex. Heron	Carlos Dickson	J. L. Hanns	Indianapolis	8,179 30	6,342 70
1877	Jacob Mutz	Alex. Heron	Carlos Dickson	J. W. Furnas	Indianapolis	6,337 95	14,511 00
1878	W. B. Seward	Alex. Heron	Carlos Dickson	R. M. Lockhart	Indianapolis	5,057 00	15,991 33
1879	Robert Mitchell	Alex. Heron	Carlos Dickson	R. M. Lockhart	Indianapolis	5,472 00	22,919 50
1880	W. H. Ragan	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	6,553 00	18,809 05
1881	R. M. Lockhart	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	6,855 50	17,874 00
1882	H. C. Meredith	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	8,096 00	25,631 10
1883	Robert Mitchell	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	9,581 13	26,858 43
1884	Robert Mitchell	Alex. Heron	S. Johnson.	Fielding Beeler	Indianapolis	10,414 30	24,479 40
1885	R. M. Lockhart	Alex. Heron	S. Johnson.	Fielding Beeler	Indianapolis	9,000 50	26,555 11
1886	W. B. Seward	Alex. Heron	S. Johnson.	H. B. Stout	Indianapolis	9,419 00	26,522 84
1887	W. B. Seward	Alex. Heron	S. Johnson.	Chas. E. Merrifield	Indianapolis	9,726 50	28,370 65
1888	J. N. Davidson	Alex. Heron	S. Johnson.	R. M. Lockhart	Indianapolis	9,917 50	22,120 90
1889	J. N. Davidson	Alex. Heron	S. Johnson.	C. E. Merrifield	Indianapolis	10,200 00	27,130 00
1890	W. A. Banks.	Alex. Heron	S. Johnson.	C. E. Merrifield	Indianapolis		

STATE INDUSTRIAL ASSOCIATIONS.

OFFICERS FOR THE YEAR 1890.

Headquarters at Agricultural Rooms, in the State House.

Indiana State Board of Agriculture.—President, Hon. W. A. Banks, Laporte, Laporte County; Secretary, Alex. Heron, Indianapolis. Organized May, 1851.

Indiana Horticultural Society.—President, Hon. Joseph Ratliff, Richmond, Wayne County; Secretary, C. M. Hobbs, Bridgeport, Marion County. Organized 1842.

State Association of Shorthorn Breeders.—President, Judge J. A. Buckles, Muncie, Ind.; Secretary, Will Christian, Indianapolis. Organized May, 1872.

Indiana Horse Breeders' Association.—President, Dr. Chas. E. Wright, Indianapolis; Secretary, Horace Woods, Indianapolis, Marion County. Organized January, 1885.

Indiana Jersey Cattle Breeders' Association.—President, D. H. Jenkins, Indianapolis, Marion County; Secretary, W. C. Smock, Indianapolis. Organized January, 1883.

Indiana Swine Breeders' Association.—President, Lloyd Mugg, Center Point, Clay County; Secretary, J. W. Pierce, Peru, Miami County. Organized January, 1877.

Indiana Wool Growers' Association.—President, Hon. I. N. Cotton, Traders' Point; Secretary, J. W. Robe, Greencastle, Putnam County. Organized October, 1878.

Indiana Poultry Breeders' Association.—President, Wm. Tobin, Indianapolis; Secretary, Major Griffin, Mauzy, Rush County. Reorganized January, 1887.

Indiana Bee-Keepers' Association.—President, Dr. E. H. Collins, Mattsville, Hamilton County; Secretary, Geo. C. Thompson, Southport, Marion County. Organized October, 1879.

Indiana Cane Growers' Association.—President, W. F. Leitzman, Clayton; Secretary, A. S. Chapman, Madison, Jefferson County. Organized December, 1882.

Indiana Tile Makers' Association.—President, Geo. S. Poliock, Sullivan, Sullivan County; Secretary, J. A. Dailey, Riley, Vigo County. Organized November, 1878.

Indiana State Florist Association.—President, M. A. Hunt, Terre Haute; Secretary, Wm. G. Bertermann, Indianapolis. Organized February, 1887.

Indiana Fish and Game Association.—President, Col. W. T. Dennis, Richmond, Wayne County; Secretary, Jesse H. Blair, Indianapolis, Ind. Organized December, 1889.

METEOROLOGICAL TABLES.

TABLE I.

Showing Monthly Mean Barometer, Thermometer, Relative Humidity; Maximum and Minimum Temperature; Prevailing Direction of Wind; Number of Cloudless, Partly Cloudy and Cloudy Days; Average Amount of Cloudiness; Number of Days on which 0.01 Inch or More Precipitation Fell; Total Amount of Precipitation and Number of Days on which the Temperature Fell Below the Freezing Point in Indianapolis, Ind., for Each Month of the Year 1889, as Recorded in the Signal Office at Indianapolis, Ind.

1889. MONTHS.	Mean Barometer Reduced to Sea Level—Inches.	Mean Temperature—Degrees.	Relative Humidity—Per cent.	Maximum Temperature—Degrees.	Minimum Temperature—Degrees.	Prevailing Direction of Wind.	Number of Cloudless Days.	Number of Partly Cloudy Days.	Number of Cloudy Days.	Average Cloudiness.	Precipitation Fell.	Total Amount of Precipitation—Inches.	Number of Days on which Min. Temp. Fell Below Freezing.
January . . .	30.056	31.1	76	58	11	SW	9	6	16	5.1	11	2.52	20
February . .	30.174	27.0	76	64	-1	W	6	8	14	4.7	13	1.29	24
March . . .	30.004	44.4	66	71	23	NW	6	14	11	4.8	8	2.15	8
April . . .	30.018	55.1	56	80	23	E	6	10	14	4.7	9	2.07	1
May	29.974	61.3	62	90	35	S	6	9	16	6.2	15	5.76	0
June	30.012	67.3	72	89	41	SW	1	12	17	5.3	12	4.88	0
July	29.983	74.2	70	92	57	S	6	11	14	6.3	14	5.98	0
August . .	30.098	71.4	63	91	51	NE	16	9	6	4.5	6	0.51	0
September .	30.054	64.5	70	90	39	S	13	8	9	4.9	9	3.79	0
October . .	30.133	60.3	66	80	29	N	13	9	9	4.9	5	1.70	3
November .	30.102	40.9	77	67	12	W	6	5	19	7.3	18	4.97	10
December .	30.124	45.7	78	66	24	SSE	7	12	12	6.2	13	2.76	5
Ann'l means	300.62	53.1	69	78.3	28.5	SW	.	.	.	5.5	...	...	...
Annual totals	...	...	...	...	...	...	95	111	157	...	133	44.1	71

TABLE II.

Table Showing Daily and Monthly Mean Temperature at Indianapolis, Indiana, for each Day and Month of the Year, 1889, as Recorded at the Signal Office at Indianapolis, Indiana.

(Fahrenheit.)

1.	33	25	30	40	50	48	78	70	80	62	58	36
2.	36	34	38	54	42	58	82	76	73	54	48	46
3.	42	36	37	48	48	61	72	73	73	62	46	42
4.	38	42	34	44	56	56	68	76	78	54	44	34
5.	37	14	40	44	62	58	69	67	67	58	33	42
6.	35	9	44	36	68	64	72	66	65	48	36	44
7.	39	20	40	46	77	66	77	68	64	40	38	44
8.	42	34	33	51	78	66	80	72	67	44	44	55
9.	30	30	28	56	78	68	80	76	72	54	45	50
10.	28	30	32	57	78	57	80	73	75	68	44	54
11.	30	28	37	66	73	62	79	66	75	66	50	45
12.	32	18	48	69	65	66	79	68	70	68	44	46
13.	40	20	62	48	64	68	76	72	73	52	44	54
14.	34	32	54	44	65	73	78	71	76	45	40	52
15.	41	41	59	51	66	76	68	66	66	50	37	45
16.	52	52	60	55	75	76	70	65	58	44	38	54
17.	37	32	56	58	78	75	72	64	68	57	36	58
18.	27	22	46	66	70	75	80	66	63	58	38	48
19.	28	12	50	68	66	78	70	66	56	57	44	52
20.	33	16	42	66	62	71	71	66	69	50	44	48
21.	20	34	40	58	56	71	74	75	62	44	48	44
22.	34	24	44	64	48	62	77	70	54	46	39	44
23.	40	6	44	50	50	60	72	70	62	42	44	42
24.	44	10	50	66	64	66	72	72	68	42	53	52
25.	40	22	46	61	56	70	69	72	69	52	40	56
26.	44	34	44	52	58	74	74	74	52	48	38	43
27.	28	37	50	58	60	74	74	76	50	46	37	40
28.	21	39	44	50	56	76	73	74	59	43	24	48
29.	22	.	41	50	55	77	66	74	58	40	18	50
30.	30	.	41	51	40	77	71	77	58	42	24	31
31.	27	.	56	.	42	.	70	77	.	49	.	31

1889.	34.2	27.0	44.4	53.8	61.6	67.3	74.2	71.5	64.5	50.8	40.9	46.2
-------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE III.

Table Showing the Highest and Lowest Temperature in Degrees (Fahrenheit) at Indianapolis, Ind., During Each Month of the Year 1873 to 1889, Inclusive, as Recorded at the Signal Office.

MONTH.	1873.		1874.		1875.		1876.		1877.		1878.		1879.		1880.		1881.		1882.		1883.		1884.		1885.		1886.		1887.		1888.		1889.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.			
Jan	60	-13	63	1 44	-18.5	69	9	58	-11	54	-2	57	-22	66	20	47	-6	61.5	7	45	-11	56.8	-25	51.7	-11.3	55.3	-15	64.4	-11.8	59.8	-6	58	10	
Feb	63	1 59	17	55	-8	66	-3	63	20	61	18	58	-1	65	14	59	1	65	15	72	4	65.2	-1.6	59	-9	54.5	-4.2	66.2	10.5	59.8	-2.1	64	-1	
March	64	2 72	20	77	9	72	11	73	9	72	23	74	15	70	21	62	18	70.5	24	68.4	12	69.5	5	63.8	3.2	75.9	15	69.6	15.8	69	8.8	71	22	
April	81	32	71	27	79	19	77	29	80	28	80	35	82	83	27	78	20	80	24	85.3	30.4	80.5	31.4	78.3	27.8	84	24.5	85	22.4	83.3	30.9	80	23	
May	86	47	89	40	88	34	86	33	88	31	81	35	87	85	40	89	44	80.5	37	82.8	35	84	40.6	87.7	35.3	87.1	39.1	89	49	86.2	36	90	35	
June	94	62	96	50	91	51	91	51	89	45	91	50	91	91	54	92	48	94	45	89	50	92.8	54.7	90.1	41.1	89	46.9	94	49.4	96.4	45.3	89	41	
July	91	60	97	58	92	63	63	61	90	54	96	58	96	93.5	55	101	57	89	53	92	56.8	90	55.2	94.5	47.5	91.8	50.9	100.8	58	6	94.8	57.5	92	57
August	95	61	95	56	87	51.5	89	48	89	57	92	53	93	94	51	101	55.5	90	52	91	53	89	50.2	95.1	47.7	92.2	53	99	49.2	97.5	48.9	91	51	
Sept.	87	42	90	41	90	35	88	42	85	42	88	44	80	89	41	94.5	48	85	42	87	40.4	90.3	44.8	83.8	38.4	90.2	43.3	93.1	34	87.9	33.7	90	39	
Oct..	76	25	78	28	75	28	75	26	83	35	81	23	86	78	31	81	39	79	35.5	81	35	87	31.2	77.8	31.4	82.3	31.7	82.4	22.3	78.4	32	80	29	
Nov.	59	13	71	-2	61	14	73	18	61	9	65	25	75	63	-5	63	10	72	22	65	10	66.8	12.3	69.8	23.7	71.6	16.5	73.5	3.8	76	25.7	67	12	
Dec.	62	12	61	12	68	-1	47	-15	67	20	48	-12	64	56	-13	63	14	57	-10	62	9	60.7	-12.3	56.3	-2.1	57.7	-3.5	57	3	56	17.4	68	24	

TABLE IV.

Annual Means for the Years 1872 to 1889 Arranged for Comparative Purposes, as Compiled from the Records of the Signal Office at Indianapolis, Ind.

YEAR.	Mean Barometer Reduced to Sea Level—Inches.	Mean Temperature—Degrees.	Mean Relative Humidity—Per Cent.	Maximum Temperature During the Year—Degrees.	Minimum Temperature During the Year—Degrees.	Prevailing Direction of Wind.	Number of Clear Days.	Number of Fair Days.	Number of Cloudy Days.	Average Amount Cloudiness—Scale 0 to 10.	No. of Days on which 0.01 Inch or more of Precipitation fell.	Total Amount of Precipitation.	Greatest Precipitation in any 3 consecutive hourly Measurements—Inches and Hundredths.	No. of Days on which the Maximum Temperature was below Freezing.	No. of Days on which the Minimum Temperature was below Freezing.	No. of Days on which the Temperature was above 90°.
1872	30.044	50.8	67.5	96.0	-11.0	SW.	85	142	139	5.0	122	34.07	3.71	49	120	17
1873	30.004	52.0	69.2	95.0	-13.0	SW.	97	141	127	5.0	145	52.32	3.73	38	99	9
1874	30.037	55.0	63.0	97.0	-2.0	NW.	97	150	118	5.0	120	43.60	2.61	17	83	27
1875	30.005	50.5	66.1	92.0	-18.5	W.	81	134	146	5.0	155	54.58	2.86	44	107	5
1876	29.997	53.2	68.1	93.0	-15.0	W.	83	126	157	6.0	155	57.53	2.70	30	101	9
1877	30.018	54.0	67.2	90.0	-11.0	SW.	98	141	126	5.0	139	39.08	2.07	20	84	0
1878	29.946	55.4	64.6	96.0	-12.0	SE.	84	159	122	6.0	148	38.62	2.03	17	68	13
1879	30.036	53.9	64.4	96.0	-22.0	S.	94	135	136	5.0	122	42.88	2.33	27	96	12
1880	30.030	54.4	65.4	94.0	-13.0	W.	106	145	115	5.0	123	50.99	2.00	26	19	9
1881	30.024	54.9	67.4	101.0	-6.0	SW.	100	140	125	5.0	112	48.74	4.30	19	91	31
1882	30.045	53.8	71.1	94.0	-10.0	NW.	107	141	117	5.3	141	53.68	3.02	35	78	4
1883	30.059	51.8	66.2	92.0	-11.0	SW.	96	157	111	5.4	164	54.12	3.71	40	106	6
1884	30.044	52.5	67.6	92.8	-25.0	S.	99	144	123	5.6	159	39.99	2.16	42	91	5
1885	30.019	49.3	73.9	95.1	-11.3	SW.	92	153	120	5.5	147	39.51	2.87	47	111	15
1886	30.039	51.0	71.3	94.8	-15.0	S.	108	150	107	5.2	138	39.88	2.11	31	127	13
1887	30.044	52.7	66.0	100.8	-11.8	S.	113	146	106	5.2	119	32.08	1.89	36	120	34
1888	30.082	50.6	68.8	97.5	-6.0	NW.	113	119	134	5.1	124	41.36	2.62	18	103	17
1889	30.062	53.1	69.0	78.3	-28.5	SW.	96	113	157	5.5	133	38.41	2.44	71	71	5

Verified and corrected at the office of the Chief Signal Officer of the Army, Washington.

TABLE V.

Table Showing Monthly Mean Barometer Reduced to Sea-Level (and since 1875 to Sea-Level), at Indianapolis for Each Year, from 1872 to 1889, Inclusive, as Recorded at the Signal Office.

MONTHLY MEAN BAROMETER (Inches).

MONTH.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Jan	30.130	30.056	30.120	30.232	30.107	30.160	30.022	30.151	30.028	30.136	30.159	30.162	30.188	30.156	30.053	30.031	30.250	30.056
Feb	30.008	30.044	30.099	30.129	30.070	30.156	29.917	30.112	30.049	30.092	30.101	30.283	30.060	30.026	30.114	30.156	30.086	30.174
Mar	30.043	30.030	30.044	29.999	29.982	30.013	29.912	30.073	30.059	29.824	30.068	30.057	30.040	30.095	29.975	30.055	30.121	30.004
Apr	29.980	29.888	30.016	29.984	29.978	29.898	29.746	29.989	29.946	29.963	30.027	29.965	29.948	30.014	30.029	29.999	30.154	30.018
May	29.988	29.895	29.940	29.922	29.963	29.992	29.904	29.951	29.974	29.967	29.955	29.940	29.956	29.909	29.925	29.974	29.940	29.974
June	29.976	29.905	29.925	29.948	29.851	29.907	29.896	29.954	29.947	29.906	29.907	29.931	30.009	30.013	29.951	29.992	29.954	30.012
July	29.964	29.982	29.954	29.935	29.957	29.931	29.912	29.627	29.957	29.935	30.012	30.012	29.918	29.964	29.936	29.975	30.047	29.988
Aug	30.032	30.013	29.952	29.945	30.001	29.926	29.876	29.951	29.976	30.005	29.981	30.050	30.084	29.946	29.982	29.994	30.041	30.098
Sept	29.997	30.632	30.020	30.020	29.954	29.997	30.050	30.061	30.033	30.017	30.067	30.043	30.052	30.025	30.084	30.076	30.082	30.054
Oct.	30.085	30.062	30.093	29.999	29.972	29.983	30.023	30.108	30.062	30.130	30.034	30.090	30.153	29.973	30.198	30.086	30.014	30.133
Nov.	30.112	30.010	30.116	30.037	29.990	30.038	30.010	30.078	30.207	31.163	30.177	30.161	30.131	30.001	30.051	30.094	30.155	30.102
Dec	30.218	30.125	30.165	29.936	30.109	30.097	30.062	30.080	30.124	30.170	30.152	30.136	30.156	30.106	30.169	30.095	30.142	30.134

TABLE V—Continued.

MONTHLY MEAN TEMPERATURE IN DEGREES, FAHRENHEIT.

MONTH.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
January	26.6	24.5	35.5	20.0	38.6	27.8	34.5	26.5	45.9	23.7	31.6	24.5	21.6	22.5	22.2	24.4	23.3	34.2
February	29.6	30.3	35.6	21.2	37.0	39.2	39.0	30.1	38.7	29.8	42.2	32.0	34.7	20.5	28.2	34.6	30.5	27.0
March	35.0	37.9	41.6	37.4	37.5	35.5	49.9	42.5	41.6	36.8	44.8	36.1	41.1	33.0	39.4	38.2	35.7	44.4
April	55.0	51.2	45.8	49.3	52.0	53.8	58.6	52.3	55.2	47.5	53.3	50.3	50.2	51.5	54.6	52.3	52.6	53.8
May	64.3	63.9	66.6	62.3	65.7	61.9	61.6	66.2	68.4	70.2	58.5	60.9	62.1	60.5	64.3	67.3	60.5	61.6
June	73.0	76.7	76.2	70.8	71.9	71.5	69.6	71.4	73.3	72.8	71.6	71.5	73.2	68.8	69.2	73.8	72.9	67.8
July	77.7	75.3	78.3	75.6	77.7	75.8	79.1	79.5	75.9	79.4	72.6	75.1	73.7	76.3	74.3	80.6	75.2	74.2
August	75.9	74.8	75.5	70.2	75.0	73.1	75.2	72.6	75.6	79.0	73.0	70.4	72.3	70.0	72.9	73.3	71.1	71.4
September	66.7	63.8	68.6	63.1	64.4	66.3	67.0	61.7	64.2	73.5	65.5	63.2	71.6	63.9	66.6	65.8	60.9	64.5
October	53.3	49.8	55.0	50.8	51.1	58.2	54.0	62.3	52.9	60.2	58.8	54.8	58.3	50.4	55.3	50.2	48.5	50.8
November	35.3	37.0	42.1	39.9	41.1	43.6	44.9	45.4	31.2	42.8	43.3	45.0	41.5	41.9	39.3	40.5	42.4	40.9
December	23.8	37.2	35.3	41.2	22.6	46.3	26.9	35.6	24.2	40.2	30.4	34.4	29.9	32.9	25.2	30.8	34.0	46.7

TOTAL PRECIPITATION, IN INCHES AND HUNDREDTHS.

January	1.17	4.50	3.75	1.01	5.94	1.56	2.38	1.47	6.32	2.10	3.74	1.32	1.05	3.31	4.02	1.48	2.81	2.52
February	1.41	2.85	4.17	1.88	4.49	1.21	2.10	2.17	3.16	6.43	7.28	7.19	4.73	1.54	1.51	4.61	1.45	1.29
March	1.31	3.90	5.79	5.23	7.44	5.23	1.23	3.36	4.03	4.01	6.11	3.25	3.01	0.82	2.85	2.78	4.26	2.15
April	3.26	5.91	4.44	1.29	2.27	3.11	5.51	2.25	6.43	2.60	3.68	2.73	2.89	5.28	3.09	3.92	4.05	2.07
May	3.22	3.89	4.03	5.13	5.11	2.09	3.24	3.38	8.22	3.78	7.65	4.02	4.80	3.66	3.82	2.39	4.73	5.76
June	3.28	3.70	5.25	12.20	7.54	6.21	2.25	2.94	8.48	3.92	9.35	4.59	4.11	5.74	4.92	2.45	2.65	4.88
July	11.00	11.28	3.53	13.12	7.48	4.19	4.54	2.40	2.26	0.82	3.43	6.12	6.03	1.43	2.27	1.41	3.33	5.98
August	2.69	1.32	2.90	3.66	5.86	4.13	2.42	5.71	2.67	0.97	4.51	2.48	0.46	5.82	6.70	3.15	5.84	0.54
September	2.81	1.76	2.09	1.34	3.85	2.04	3.35	6.94	1.86	3.25	0.72	2.72	3.09	3.50	3.43	2.11	1.23	3.79
October	1.07	5.27	0.36	2.67	4.42	3.32	4.78	1.34	3.54	6.11	2.18	8.56	2.31	3.25	1.20	0.55	4.03	1.70
November	0.80	2.55	4.82	3.04	2.26	3.64	2.87	5.82	2.58	9.35	2.50	6.80	1.46	2.71	3.87	3.71	5.07	4.97
December	2.10	5.90	2.79	4.01	0.90	2.45	3.95	5.10	1.44	5.40	2.53	4.34	6.06	2.45	2.20	4.52	1.91	2.76

Compared and corrected at Signal Office, War Department, Washington City, April 7, 1890.

CONSTITUTION

OF THE

Indiana State Board of Agriculture,

—AS—

Revised and Adopted at the January Meeting of the Board, 1883.

ARTICLE 1. The name and style of this society shall be ' The Indiana State Board of Agriculture; ' its objects, to promote and improve the condition of agriculture, horticulture, and the mechanic, manufacturing and household arts.

ART. 2. There shall be held in the city of Indianapolis, in such time as may be prescribed by law, an annual meeting of the State Board of Agriculture, together with Presidents, or other delegates duly authorized, from each county, or such other agricultural society as may be authorized by law to send delegates, who shall, for the time being, be *ex-officio* members of the State Board of Agriculture, for the purpose of deliberation and consultation as to the wants, prospects and condition of the agricultural interests throughout the State; and at such annual meetings the several reports from county societies shall be delivered to the President of the State Board of Agriculture; and the said President and delegates shall, at this meeting, elect suitable persons to fill all vacancies in this Board: *Provided, however,* That said election shall not affect the members of the Board present, whose terms shall not be considered to expire until the last day of the session.

ART. 3. The State Board elect shall meet immediately after the adjournment of the State Board for the purpose of organization, and for the transaction of such other business as the wants and interests of the society may require; and hold such other meetings, from time to time, for making out premium lists, preparing for State Fairs, and all other business necessary to the promotion of the objects of the society.

ART. 4. The State Board elect shall consist of sixteen members, chosen from the following districts:

- 1st District—Posey, Vanderburgh, Gibson, Warrick and Spencer counties.
- 2d District—Knox, Daviess, Martin, Pike, Dubois, Crawford and Perry counties.
- 3d District—Harrison, Washington, Orange, Floyd, Clark and Scott counties.
- 4th District—Jackson, Lawrence, Brown, Monroe, Green, Owen and Sullivan counties.

5th District—Jefferson, Switzerland, Ohio, Dearborn, Franklin, Ripley and Jennings counties.

6th District—Bartholomew, Decatur, Rush, Fayette, Union and Wayne counties.

7th District—Madison, Hancock, Hamilton, Henry and Shelby counties.

8th District—Marion and Johnson counties.

9th District—Clay, Vigo, Parke, Vermillion and Fountain counties.

10th District—Putnam, Morgan, Hendricks, Montgomery and Boone counties.

11th District—Delaware, Randolph, Jay, Adams, Wells, Huntington and Blackford counties.

12th District—Carroll, White, Benton, Newton, Tippecanoe, Warren, Jasper and Pulaski counties.

13th District—Clinton, Tipton, Howard, Grant, Wabash and Whitley counties.

14th District—Elkhart, Kosciusko, Fulton, Cass and Miami counties.

15th District—St. Joseph, Marshall, Starke, Laporte, Porter and Lake counties.

16th District—Allen, Dekalb, Steuben, Lagrange and Noble counties.

Chosen for two years, one-half of whose terms expire every year, to-wit: Those representing the first, second, third, fourth, seventh, fourteenth, fifteenth and sixteenth, expire at the annual meeting of 1860, and those representing the fifth, sixth, eighth, ninth, tenth, eleventh, twelfth and thirteenth districts, expire at the annual meeting to be held in January, 1861. To be chosen by ballot.

ART. 5. It shall be the duty of the President to preside at all meetings, conduct the business in an orderly and parliamentary manner, and officially sign all vouchers and drafts upon the Treasurer (except for premiums), and all other instruments requiring the same, and call special meetings in cases of emergency.

ART. 6. The State Board elect shall, at the annual meeting after the adjournment of the delegate meeting, proceed to elect one of their number President, who shall hold his office for a term of one year, and until his successor is elected and qualified, and one of their number for Vice President, whose term shall be the same as President, who shall act, and, for the time being, have all the power as President, whenever the President is absent from any regular meeting. They shall also elect some suitable person as Secretary and some suitable person as Treasurer, and a General Superintendent, who shall hold their offices each for one year, unless removed for incompetency or neglect of duty. They shall also elect four of their number who shall, with the President, constitute an Executive Committee, who shall have power to act in cases of emergency, where loss would result by waiting till a regular meeting of the Board, but shall have no power whatever during the meeting of the Board.

ART. 7. It shall be the duty of the Treasurer to safely keep the funds belonging to the society, pay out the same on orders or drafts drawn by the Secretary, and report annually to the State Board, and as much oftener as he may be called upon by the Board, and shall give bond for the faithful performance of his duties.

ART. 8. It shall be the duty of the General Superintendent to take care of and carefully keep all property belonging to the Society, have the care and control of the Fair grounds during the recess; have the supervision and oversight of such improvements or additions as may be directed by the State Board, and, under their direction, procure materials, contract for labor, and shall be, during the continuance of a Fair, the Chief Marshal and head of the police. The members of the Board shall employ all the necessary police and gate-keepers.

ART. 9. The Secretary shall keep a true record of the proceedings. He shall conduct all correspondence on behalf of the society, except when otherwise directed by the president. He shall, by himself and assistants by him appointed, arrange the details of the entries, tickets, and enroll the names of committees and judges of the State Fair, receive and record the various reports of the awarding committees, fill out and deliver all diplomas and certificates. It shall be the duty of the Secretary to condense the County Agricultural Reports for each year into one volume, and superintend the publishing of the same. He shall audit and file all accounts against the Board; draw orders in favor of the proper persons on the

Treasurer for the amount; but orders shall not be drawn payable to order or bearer, but to the name of the party alone, or his agent. He shall make an annual report, showing amount of all orders upon the treasury, and shall perform such other duties as the best interests of the society may demand; but he is at all times subject to the direction and control of the State Board.

ART. 10. At the annual meeting of the Board the salaries of the Treasurer, Secretary and Superintendent shall be fixed for the ensuing year: *Provided*, That said Board may, in their discretion, at any meeting of said Board, make said officers an additional allowance for *extra* services.

ART. 11. That no compensation shall be allowed to delegates attending the annual meeting of the State Board; nor shall the members of the State Board elect be paid any sum of money, as compensation or otherwise, except by order of the Board elect.

ART. 12. The State Board may adjourn from time to time, or they may be called together by the Secretary, by order of the President, by a written notice to each member, enclosed by mail, and a notice of such meeting published in two or more newspapers of general circulation, in the city of Indianapolis; and all meetings so held by adjournment, or calls, shall be deemed regular and legal.

ART. 13. Any alteration or amendment to this Constitution may be made at the annual meeting of the State Board, two-thirds of all the members voting for such amendment.

ART. 14. The following standing committees shall be appointed by the President, to whom all matters of business coming up for reference under their particular heads, shall be referred, unless otherwise specially directed by the Board:

1. Finance and Claims.
2. Rules and Regulations.
3. Fair Grounds.
4. Unfinished Business.
5. Geological Survey—Executive Committee, *ex-officio*.
6. Premium List.

AMENDMENTS TO THE CONSTITUTION.

At the May meeting in 1851, certain rules, embracing ten sections, for the government of county agricultural societies, were adopted by the Board of Agriculture, as required in Section 1 of the statute laws enacted by the Legislature of Indiana, for the "Encouragement of Agriculture," approved February 17, 1852.

At the February meeting of 1868, the rules were found inexpedient and repealed, and the following resolutions submitted by the Committee on Rules and Regulations, were adopted:

Resolved, That all county and district societies shall be organized and governed by the laws of the State of Indiana in regard to agricultural societies, and especially under the act passed by the Legislature and approved February 17, 1852.

Resolved, That all societies so organized will be entitled to send delegates to this Board (State Board of Agriculture), at its annual meetings, and will be received and acknowledged upon the presentation of their reports and credentials and compliance with the laws as legally organized societies.

REVIEW OF INDIANA CROPS.

Statistics are only valuable when they are comparative, and the aim of this department has been to furnish as complete a review of Indiana's crop productions from year to year in as abbreviated form as possible, and at the same time compare the last year's crops with those of the year or years preceding, that the seeker after information in this direction can examine for himself and determine whether Indiana is progressing, from an agricultural point of view, or retrograding.

Our deductions so far in this direction have been decidedly satisfactory to this department, and will bear out the oft repeated assertions in reports of this Board compiled prior to the time when the Legislature, by enactment, established a State Bureau for the Collection of Agricultural and other Statistics, to-wit: That Indiana stands foremost among the States of this Union in the richness of her soil, and in its adaptability to the successful propagation of as great a variety of the cereals, fruits, etc., as any State in these United States, now recognized throughout the length and breadth of the civilized world as THE greatest grain growing country, besides being the richest in natural resources of every description of any country on the face of the globe.

A comparison of the crops for 1888 and 1889 is decidedly entertaining, and speak volumes for the thrift and enterprise of the agriculturists of Indiana during the year just closed. Nearly every product of the State showed an increase over the year previous, and in several instances this increase was remarkable. The figures following show an increase in the principal crops, viz: Wheat, rye, oats, barley, potatoes, hay, cattle, hogs, horses and mules,

CORN.

The crop of 1889, following that of the largest corn production in the history of the State, was above an average (31 bushels to the acre), being $2\frac{1}{2}$ bushels more than the average for the past ten years, which was $28\frac{1}{2}$ bushels.

The acreage was 1,326 acres less than '88, with a shortage of 21,894,123 bushels produced, which is not remarkable when considering the unparalleled crop of that year (1888).

Tippecanoe County leads the State in the amount produced (2,457,420 bushels); Crawford County produced the most to the acre (45 bushels), while Vermillion raised the most corn to the square mile of territory (5,849 bushels).

WHEAT.

The State is fast gaining renown as a "wheat producer" and the crop of 1889 added much to the laurels already secured by giving to the State the largest crop but three ever harvested within her borders.

The production, 41,541,570 bushels, against 28,750,764 the year previous, a gain of $\frac{1}{3}$ with an increase of 4.4 bushels to the acre, was a "consummation devoutly to be wished," and was heralded with joy by the consumer as well as the producer, as the crop of 1888, the smallest in the history of the State, was not reassuring to the latter and filled with forebodings the hearts of the former, who are dependent for their bread supply.

Gibson County produced the most wheat, 1,469,858 bushels, also the most to the square mile, 3,114 bushels, while Knox County had the largest yield to the acre, $2\frac{2}{3}$ bushels.

It will be observed that Gibson takes high rank as a wheat-producing county, having led the State the preceding year (1888).

OATS.

This crop "bobbed up smiling" and greeted the feeder of live stock with an array of figures (28,710,935 bushels) that was calculated to make his heart glad, as it bespoke a plentiful

supply of this commodity at a reasonable outlay of cash. This crop was the largest production in ten years, and in consequence oats were cheaper (twenty-three cents per bushel) than at any time since the beginning of the civil war. Benton County, as usual (this has occurred four consecutive years) leads the State in the amount produced, 1,420,403 bushels; also, the most to the square mile of territory, 3,757 bushels, while Carroll County produced the most to the acre, forty-three bushels.

TIMOTHY AND CLOVER HAY.

The hay crop was unprecedented, timothy and clover combined showing a gain over any preceding year in the past ten years, the total production amounting to the enormous sum of 4,172,575 tons. Of timothy 274,159 tons more were harvested from an acreage 22,052 acres less than that of 1888. This is surprising. Lake County produced the most timothy hay, 38,634 tons; Hendricks County the highest average to the acre, over two tons, while Ohio County produced the most according to area, 107 tons to the square mile.

Of clover hay almost double the amount was harvested in 1889 than in 1888, aggregating 2,349,528 tons, and averaging the State over the unequalled amount of two tons to the acre. This is probably without precedent in this country, and shows that Indiana farmers are alive to the importance of raising clover. Randolph County produced the most clover, 52,462 tons, while Wabash produced the most to the square mile, 120 tons.

BARLEY.

Of barley, 416,325 bushels were produced on an acreage of 19,825, the largest production and the most sown in five years. St. Joseph County produced the most, 49,434 bushels; Allen County the most to the acre, fifty-four bushels, and Dearborn County the most to the square mile of territory, 117 bushels.

RYE.

The same was true of the rye crop; 871,216 bushels was produced on an acreage of 64,451, averaging 16 bushels to the acre, the highest average in five years, and probably in the history of the State.

Elkhart County produced the most rye, 130,725 bushels; also, the most to the square mile, 276 bushels, while Spencer County produced the highest average to the acre, 40 bushels.

BUCKWHEAT.

There was a much smaller acreage of buckwheat in 1889 than in 1888, and therefore a smaller yield, 89,754 bushels. Still the average to the acre the State over, 14 bushels, was greater than the year previous.

Lake County produced the most, 14,460 bushels, while Wayne County produced the most to the acre, 25 bushels.

FLAX-SEED.

Of flax-seed, 78,142 bushels were produced on a smaller acreage than usual, only 10,640 acres, about 3,500 less than 1888. The average per acre (7.3 bushels), however, was larger than 1888.

Wayne County produced the most flax seed, 11,935 bushels, while Clay County produced the most to the acre, 11 bushels.

POTATOES.

The crop of Irish potatoes was *in line*, and "kept up with the procession;" in fact, occupied an exalted place, just behind the band in this grand march of progression: 7,783,267 bushels were produced, being about 2,000,000 bushels more than was ever before reported in the State's history.

The average per acre the State over, 98.2 bushels, was something astonishing, it being 20.2 bushels more per acre than was ever before accredited to Indiana.

Allen produced the most, 273,768 bushels, while Vanderburgh County averaged the highest number of bushels to the acre, 150.

Of sweet potatoes, 194,040 bushels were produced, Marion County leading with 15,300 bushels, while Floyd produced the most to the acre, 175 bushels.

THE DAIRY.

This great and growing interest has kept pace with others in the State, and the figures reported for 1889 show a commendable increase in the milk, butter and cheese products of Indiana, as follows: Milk gain over 1888, 8,127,555 gallons; butter, 2,051,201 pounds; cheese, 37,093 pounds. The importance of this industry as a source of revenue to the people is always underestimated, and when we consider that it excels in importance every other single interest in the State, with the exception of corn and wheat (as was shown conclusively in the '88 report from this department), it is a source of gratification to note that its advance during the year just closed has more than fulfilled the requirements of the increasing population of our own State, and that the larger cities of our sister States, such as Louisville, Cincinnati, Chicago, St. Louis and Milwaukee, are compelled to draw on us for their milk and butter supply. Marion County produced the most milk, 4,069,967 gallons; Lake County the most butter, 801,410 pounds; and Adams County the most cheese, 150,206 pounds.

LIVE STOCK.

The increase of cattle, hogs, horses and mules has been sure and steady, keeping pace with the wants of our increasing population, with a large surplus of each for export. Especially was this true of the hog product; the increase was noteworthy. This was predicted in the report of '88 on account of the high price of swine and the perceptible abatement of hog cholera that year. The march of progress in every line of industry in the State goes steadily forward, and what can be said in lauda-

tion of one interest is applicable to all. "Onward and Upward" appears to be the watchword of the farmers of Indiana, who are just now engaged in a campaign of improvement the entire State over, which promises rich results in the shape of a class of high grade and thoroughbred animals of all kinds, and the consequent demolition of the "scrub" stock, root and branch.

DISEASE AND DEATH.

A comparison of the years 1887, 1888 and 1889, in the relation of the death of domestic animals is given herewith, and presents a splendid showing in favor of the year just passed (1889). By reference to the table it will be seen that there has been a steady decrease in the death rate from all causes since 1887 of all animals except horses:

	<i>Died '89.</i>	<i>Died '88.</i>	<i>Died '87.</i>	<i>Decrease in '88.</i>	<i>Decrease in '89.</i>
Hogs	247,114	326,359	512,692	186,333	79,245
Horses	17,652	16,004	16,727	723	
Cattle.	23,627	24,758	29,075	4,317	1,131
Sheep killed by dogs, etc . .	25,248	28,850	31,800	2,950	3,602

INDIANA AGRICULTURAL STATISTICS, 1889.

We present below an accurate summary of all the principal productions of the State of Indiana for the past year (1889), compiled and condensed by this department from figures on file in the State Bureau of Statistics, by permission and through the courtesy of the chief, Hon. W. J. Peelle, Jr.

CORN.

COMPARATIVE YIELD.

YEAR.	Bushels.	Acres.	Average Bushels per Acre.
1889	106,542,161	3,418,051	31
1888	128,436,284	3,419,377	37.5
1887	70,017,604	3,239,914	21.6
1886	108,217,209	3,229,445	33.5
1885	115,433,914	3,216,997	35.8
1884	89,159,799	3,137,840	28.4
1883	89,699,237	3,125,376	28.7
1882	115,699,797	3,312,683	34.9
1881	71,387,075	3,135,178	22.7
1880	87,335,014	3,130,327	28.1

The principal corn-producing counties of the State, 1889 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Tippecanoe	2,457,420	30
Kosciusco	2,179,580	36
Shelby	2,092,265	35
Knox	2,042,511	37
Montgomery	1,956,636	33
Sullivan	1,953,914	38
Posey	1,924,508	43
Clinton	1,849,026	31
Rush	1,788,049	31
Benton	1,739,850	21

Counties producing the largest average number of bushels of corn per acre 1889:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Crawford	607,185	45
Posey	1,924,508	43
Gibson	1,721,040	40
Vermillion	1,556,480	40
Vanderburgh	950,280	40
Monroe	689,080	40
Sullivan	1,953,914	38
Johnson	1,692,520	38
Knox	2,043,511	37
Dearborn	715,987	37

Counties in the State having the largest production of corn, according to size 1889:

COUNTY.	Area Sq. Miles.	Total Production.	Average Bushels per Sq. Mile.
Vermillion	294	1,556,480	5,849
Johnson	312	1,692,520	5,424
Shelby	408	2,092,265	5,128
Tippecanoe	504	2,457,420	4,875
Sullivan	420	1,953,914	4,652
Benton	378	1,739,840	4,602
Posey	420	1,924,508	4,582
Clinton	408	1,849,026	4,531
Rush	414	1,788,049	4,318
Randolph	444	1,799,073	4,052

The Year 1888.

The principal corn-producing counties of the State, 1888:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Tippecanoe	3,965,329	48
Benton	3,305,289	39
Shelby	3,067,905	51
Knox	2,902,553	53
Rush	2,847,390	49
Madison	2,753,777	47
Randolph	2,615,437	43
Boone	2,555,061	47
Henry	2,514,480	48
Wayne	2,474,190	45

Counties producing the largest average number of bushels of corn per acre, 1888:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Cass	2,263,910	55
Knox	2,902,553	53
Dearborn	1,081,764	52
Shelby	3,067,905	51
Johnson	2,228,868	50
Tipton	1,673,250	50
Rush	2,847,390	49
Tippecanoe	3,965,329	48
Henry	2,514,480	48
Hancock	1,969,680	48

Counties in the State having the largest production of corn, according to size, 1888:

COUNTY.	Area Sq. Miles.	Total Production.	Average Bushels per Sq. Mile.
Benton.	378	3,305,209	8,558
Tippecanoe.	504	3,965,328	7,867
Shelby.	408	3,067,905	7,519
Johnson	312	2,228,868	7,143
Rush	414	2,847,390	6,877
Wayne.	394	2,474,190	6,305
Henry	400	2,514,480	6,286
Howard	295	1,825,567	6,188
Madison	450	2,753,777	6,119
Boone	420	2,555,061	6,083

WHEAT.
COMPARATIVE YIELD.

YEAR.	Bushels.	Acres.	Average Bushels per Acre.
1889	41,541,570	2,773,883	14.9
1888	28 750,764	2,726,111	10.5
1887	39,096,657	2,794,196	13.9
1886	43,226,317	2,803,922	15.4
1885	31,640,086	2,732,250	11.5
1884	40,531,200	2,990,811	13.5
1883	31,405,573	3,049,209	10.2
1882	46,928,643	3,063,348	15.3
1881	30,635,668	3,210,547	9.5
1880	47,130,684	3,109,845	15.1

The principal wheat-producing counties of the State, 1889 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Gibson	1,469,858	21
Posey	1,193,490	18
Knox	1,192,048	22
Elkhart	922,614	21
Shelby	917,056	16
Allen	909,504	18
Montgomery	898,335	15
Noble	841,176	21
Kosciusko	804,137	19
Laporte	798,600	20

Counties producing the largest average yield of wheat per acre, 1889 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Knox	1,192,048	22
Gibson	1,469,858	21
Elkhart	922,614	21
Noble	841,176	21
Laporte	798,600	20
St. Joseph	791,120	20
Sullivan	571,900	20
Kosciusko	804,137	19
Marshall	644,328	19
Posey	1,193,490	18

Counties having the largest production of wheat, according to size, 1889 :

COUNTY.	Area Sq. Miles.	Total Production.	Average Bushels per Sq. Mile.
Gibson.	472	1,469,853	3,114
Posey	420	1,193,490	2,841
Shelby.	408	917,056	2,247
Knox	540	1,192,048	2,207
Vanderburgh.	240	518,449	2,160
Noble	420	841,176	2,002
Elkhart	472	922,614	1,999
Johnson	312	612,000	1,961
Montgomery	504	898,335	1,782
Miami.	384	683,220	1,779

The Year 1888.

The principal wheat-producing counties of the State, 1888:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Gibson.	1,235,520	18
Posey	1,091,611	18.5
Knox	812,566	17
Elkhart	788,724	18
Shelby	731,705	13
Kosciusko	677,926	17.5
Rush.	641,587	13.5
Noble	617,220	16.3
Laporte	609,630	15
Bartholomew	577,937	14.3

Counties producing the largest average yield of wheat per acre, 1888:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Floyd	148,488	23
Lake.	77,480	20
Posey	1,091,611	18.5
Gibson	1,235,520	18
Elkhart	788,724	18
Vanderburgh	556,542	18
Dearborn	368,388	18
Starke	71,370	18
Kosciusko	677,926	17.5
Jefferson	313,110	17.5

Counties having the largest production of wheat, according to size, 1888:

COUNTY.	Area Sq. Miles.	Bushels Produced.	Average Bushels per Sq. Mile.
Gibson.	472	1,235,520	2,617
Posey	420	1,091,611	2,599
Vanderburgh.	240	556,512	2,318
Shelby.	408	731,705	1,792
Elkhart	472	788,724	1,671
Rush	414	641,587	1,549
Johnson	312	482,796	1,547
Fayette	212	320,970	1,514
Knox	540	812,566	1,504

OATS.

COMPARATIVE YIELD.

YEAR.	Bushels.	Acres.	Average Bushels per Acre.
1889.	28,710,935	950,231	30.2
1888.	27,493,851	937,143	29.3
1887.	24,378,984	886,927	27.7
1886.	28,330,102	872,261	32.4
1885.	25,228,033	822,934	30.7
1884.	23,576,117	791,843	29.7
1883.	19,567,789	656,286	29.8
1882.	19,615,516	684,822	28.6
1881.	14,398,420	580,279	24.8
1880.	15,563,430	686,901	22.6

The principal oat-producing counties of the State, 1889:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Benton	1,420,402	38
Allen.	933,762	37
Lake.	908,080	40
Newton	698,576	38
Adams	686,299	41
Laporte	657,220	34
Porter	648,400	40
Jasper	632,884	41
Elkhart	622,052	41
Washington	572,370	30

Counties producing the largest average number of bushels of oats per acre, 1889:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Carroll	398,008	43
Noble	572,334	42
Adams	686,299	41
Jasper	632,884	41
Elkhart	622,052	41
Lake.	908,080	40
Porter	648,400	40
Lagrange.	412,720	40
Blackford.	163,240	40
Benton	1,420,402	38

Counties having the largest production of oats, according to size, 1889 :

COUNTY.	Area Sq. Miles.	Total Production.	Average Bushels per Sq. Mile.
Benton.	378	1,420,402	3,757
Adams.	360	686,299	1,934
Newton	382	698,516	1,830
Lake	500	908,080	1,816
Dekalb	370	572,014	1,546
Porter	420	648,400	1,543
Allen	670	933,762	1,393
Noble	420	572,334	1,338
Elkhart	472	622,053	1,317
Laporte	540	657,220	1,217

The Year 1888.

The principal oat-producing counties of the State, 1888 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Benton.	1,565,042	42.5
Allen	1,034,664	38
Lake.	714,884	34
Elkhart	665,235	45
Laporte	649,152	36
White	630,739	37
Newton	621,316	34.5
Tippecanoe.	620,176	40.5
Adams	605,448	36
Dekalb.	512,964	36

Counties producing the largest average yield per acre, 1888 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Elkhart	665,235	45
Benton.	1,565,042	42.5
Jay	396,306	41
Tippecanoe.	620,176	40.5
Shelby	211,640	40
Madison	227,760	39
Allen.	1,034,664	38
Wabash	375,896	38
Marion.	309,375	37.5
White	630,739	37

Counties having the largest production of oats, according to size, 1888 :

COUNTY.	Area Sq. Miles.	Bushels Produced.	Average Bushels per Acre.
Benton.	378	1,565,042	4,140
Newton	382.5	621,316	1,626
Allen	670	1,034,664	1,544
Lake	500	714,884	1,429
Elkhart	472.5	665,235	1,409
Warren	364	499,422	1,372
White	504	630,739	1,235
Tippecanoe.	504	620,175	1,230
Laporte	540	649,152	1,202
Porter	420	496,698	1,182

TIMOTHY HAY.

COMPARATIVE YIELD.

YEAR.	Tons.	Acres.	Average Tons per Acre.
1889.	1,823,047	1,215,365	1.5
1888.	1,548,888	1,237,417	1.2
1887.	1,543,558	1,269,870	1.2
1886.	1,770,528	1,075,717	1.6
1885.	1,944,946	1,374,352	1.4
1884.	1,946,342	1,247,099	1.5
1883.	1,831,137	1,167,323	1.6
1882.	1,599,949	984,982	1.6
1881.	1,303,217	988,560	1.2
1880.	1,221,164	795,438	1.5

The principal timothy hay-producing counties, 1889:

COUNTY.	Tons Produced.	Average Tons per Acre.
Lake.	38,634	1.5
Owen	38,436	1.7
Benton.	35,935	1.5
Porter	34,387	1.5
Allen	34,074	1.5

Counties producing the largest average number of tons of timothy hay to the acre, 1889:

COUNTY.	Tons Produced.	Average Tons per Acre.
Hendricks	27,906	2
Adams	26,910	2
Elkhart	26,494	2
Dubois	26,036	2
Franklin	25,326	2

Counties in the State producing the largest amount of timothy hay, according to size, in 1889:

COUNTY.	Area Sq. Miles.	Tons Produced.	Average Tons per Sq. Mile.
Ohio	90	9,705	107
Owen	393	38,486	97
Benton	378	35,935	95
Vanderburgh.	240	21,624	90
Fayette	212	17,476	82

The Year 1888.

The principal timothy hay-producing counties, 1888 :

COUNTY.	Tons Produced.	Average Tons per Acre.
Lake.	42,915	1.5
Allen	38,668	1.5
Washington.	34,278	1.25
Greene	34,202	1.25
Benton.	30,871	1.25

Counties producing the largest average number tons of timothy hay to the acre in 1888:

COUNTY.	Tons Produced.	Average Tons per Acre.
Vermillion	17,620	2
Lake.	42,915	1.5
Allen	38,688	1.5
Grant	27,558	1.5
Vigo.	27,435	1.5

Counties in the State producing the largest amount of timothy hay, according to size, in 1888 :

COUNTY.	Area Sq. Miles.	Tons Produced.	Average Tons per Sq. Mile.
Lake	500	42,915	85
Benton.	378	30,871	81
Switzerland	221	15,939	72
Ripley.	450	30,670	68
Porter	420	28,491	67

CLOVER HAY.

COMPARATIVE YIELD.

YEAR.	Tons.	Acres.	Average Tons per Acre.
1889	2,349,528	1,174,764	2
1888	1,311,450	1,061,846	1.2
1887	1,728,776	1,121,314	1.5
1886	1,770,528	1,075,717	1.6
1885	1,662,277	1,042,759	1.6
1884	1,501,860	908,238	1.6
1883	1,628,519	939,615	1.7

Counties producing the largest amount of clover hay, 1889:

COUNTY.	Tons Pro- duced.	Average Tons per Acre.
Randolph	52,462	2
Wabash	51,140	2
Elkhart	50,384	2
Henry	48,168	2
Allen	47,364	2

The counties producing the highest average number of tons of clover hay to the acre are the same as above, and, in fact, almost every county in the State produced two (2) tons to the acre and upward, none, however, yielding three tons.

Counties having the largest production of clover hay, according to size, 1889:

COUNTY.	Area Sq. Miles.	Tons Pro- duced.	Average Tons per Sq. Mile.
Wabash	426	51,140	120
Henry	400	48,168	120
Randolph	444	52,462	118
Hancock	307	33,956	110
Howard	295	31,678	107

The Year 1888.

Counties producing the largest amount of clover hay, 1888:

COUNTY.	Tons Pro- duced.	Average Tons per Acre.
Randolph	40,962	1.5
Elkhart	36,555	1.5
Lagrange	34,411	1.5
Kosciusko	34,283	1.5
Gibson	33,646	1.5

Counties producing the largest average yield per acre, 1888:

COUNTY.	Tons Pro- duced.	Average Yield per Acre.
Howard	27,362	2
Daviess	24,584	2
Clinton	31,318	1.7
Randolph	40,962	1.5
Elkhart	36,555	1.5

Counties having the largest production of clover hay, according to size, 1888:

COUNTY.	Area Sq. Miles.	Tons Pro- duced.	Average Tons per Sq. Mile.
Union	168	17,185	102
Randolph	444	40,952	92
Howard	295	27,362	92
Lagrange	388	34,411	89
Miami	384	33,165	86

CLOVER AND TIMOTHY SEED.

COMPARATIVE YIELD.

YEAR.	Clover, Bushels.	Timothy, Bushels.
1889	253,728	33,449
1888	295,505	41,881
1887	261,284	43,515
1886	216,515	45,944
1885	237,279	47,535

Counties in the State producing the largest yield of clover and timothy seed, 1889:

COUNTY.	Bushels, Clover.	COUNTY.	Bushels, Timothy.
Noble	12,202	Allen	3,106
Dekalb.	8,243	Greene.	1,897
Whitley.	7,847	Washington	1,841
Fulton.	7,228	Jasper.	1,726
Allen	6,765	Bartholomew.	1,125

The Year 1888.

Counties in the State producing the largest yield of clover and timothy seed, 1888:

COUNTY.	Bushels, Clover.	COUNTY.	Bushels, Timothy.
Noble	11,820	Allen	4,107
Dekalb.	10,834	Bartholomew.	2,457
Fulton.	9,575	Greene.	1,941
Lagrange	8,738	Carroll	1,224
Steuben	8,332	Jay	1,121

BARLEY.

COMPARATIVE YIELD.

YEAR.	Bushels.	Acres.	Average Bushels per Acre.
1889.	416,325	19,825	21
1888.	403,515	18,913	21.3
1887.	340,663	17,311	18.5
1886.	330,078	13,577	24.3
1885	150,531	9,186	16.3

The principal barley-producing counties in the State, 1889 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
St. Joseph	49,434	33
Dearborn.	34,056	24
Franklin	32,430	23
Marion.	31,500	50
Shelby	26,190	30

Counties producing the largest yield per acre, 1889 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Allen	18,414	54
Marion	31,500	50
Wabash	3,440	40
Johnson	1,320	40
Grant	14,174	38

Counties producing the largest amount of barley, according to size, 1889 :

COUNTY.	Area Sq. Miles.	Bushels Produced.	Average Bushels per Sq. Mile.
Dearborn	291	34 056	117
St. Joseph	450	49,434	109
Franklin.	400	32,430	81
Marion	420	31,500	75
Shelby.	408	26,190	64

The Year 1888.

The principal barley-producing counties in the State, 1888 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Dearborn	59,985	31
Franklin	45,100	25
Shelby	19,992	21
Marion.	18,125	25
Laporte	15,740	20

Counties producing the largest yield per acre, 1888:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Dearborn	58,985	31
Ohio	8,092	28
Franklin	45,100	25
Marion.	18,125	25
Spencer	10,450	25

Counties producing the largest amount of barley, according to size, 1888 :

COUNTY.	Area Sq. Miles.	Bushels Produced.	Average Bushels per Sq. Mile.
Dearborn	291	59,985	206
Franklin.	400	45,100	112
Ohio	90	8,092	89
Shelby.	408	19,992	49
Marion	420	18,125	43

RYE.

COMPARATIVE YIELD.

YEAR.	Rye, Bushels.	Acres.	Average Bushels per Acre.
1889.	871,216	54,451	16
1888.	545,425	35,497	15.3
1887.	450,750	33,871	13.6
1886.	522,321	36,581	14.2
1885.	440,597	29,875	14.7

The principal rye-producing counties of the State, 1889:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Elkhart	130,725	21
Porter	43,712	16
Lake.	39,695	17
Allen	36,746	19
Marshall	36,460	16

Counties producing the largest average number of bushels per acre:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Spencer	9,160	40
Huntington.	9,230	26
Wells	20,275	25
Marion.	9,432	24
Henry	1,848	24

Counties in the State having the largest production of rye, according to size, 1890:

COUNTY.	Area Square Miles.	Total Production.	Average Bushels per Sq. Mile.
Elkhart	472	130,725	276
Porter	420	43,712	104
Marshall.	441	36,460	82
Switzerland	221	17,808	80
Starke.	306	20,720	67

The Year 1888.

The principal rye-producing counties of the State, 1888:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Allen.	60,640	32
Porter	28,674	18
Jasper	27,188	14
Pulaski.	24,495	15
Switzerland.	23,990	10

Counties producing the largest average number of bushels per acre, 1888:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Allen	60,640	32
Huntington	4,796	22
Shelby	1,188	22
Bartholomew	2,121	21
Tippecanoe	11,400	20

Counties in the State producing the largest amount of rye, according to size, 1888:

COUNTY.	Area Square Miles.	Bushels Produced.	Average Bushels per Sq. Mile.
Switzerland	221	23,990	108
Allen	670	60,640	90
Starke	306	23,744	77
Porter	420	28,674	68
Newton	882	23,160	60

BUCKWHEAT.
COMPARATIVE YIELD.

YEAR.	Bushels.	Acres.	Average Bushels per Acre.
1889.	89,754	6,411	14
1888.	91,406	6,675	13.6
1887.	69,375	6,469	10.7
1886.	105,734	6,953	15 2
1885.	67,848	6,072	11.1

Counties producing the largest quantity of buckwheat, 1889:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Lake.	14,460	20
Starke	6,138	18
Newton	5,838	21
Laporte	4,544	16
White	4,158	18

Counties producing the largest average bushels per acre, 1889 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Wayne.	3,275	25
Madison.. . . .	440	22
Newton	5,838	21
Lake.	14,468	20
Wabash	3,000	20

The Year 1888.

Counties producing the largest quantity of buckwheat, 1888 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Lake.	13,699	19
Newton.	6,540	20
Pulaski.	4,416	12
Starke	4,356	12
Laporte	4,270	14
Kosciusko	3,322	22
Jasper	3,015	15
Wayne.	2,775	15
St. Joseph	2,760	20
Cass	2,750	10

Counties producing the largest quantity of buckwheat to the acre, 1888, are the same as above, ranking in order as follows: Kosciusko, Newton, St. Joseph, Lake, Jasper, Wayne, Laporte, Pulaski, Starke and Cass.

FLAXSEED.

COMPARATIVE YIELD.

Year.	Bushels.	Acres.	Average Bushels per Acre.
1889.	78,142	10,640	7.3
1888.	101,693	13,949	7.2
1887.	107,208	14,872	7.2
1886.	153,128	18,268	8.3
1885.	132,181	17,767	7.4

The principal flaxseed-producing counties of the State, 1889 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Wayne.	11,935	7
Huntington.	6,615	7
Wells	6,472	8
Allen	5,787	9
Adams.	4,950	9

Counties producing the largest number of bushels to the acre, 1889 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Clay.	1,133	11
Jennings.	1,340	10
Greene.	280	10
Knox	180	10
Jasper	160	10

The Year 1888.

The principal flaxseed-producing counties of the State, 1888 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Wayne	15,384	8
Huntington	14,532	7
Benton	7,150	10
Wells	6,783	7
Newton	6,489	7

Counties in the State producing the largest number of bushels to the acre, 1888 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Benton.	7,150	10
Allen	6,000	10
Wayne	15,384	8
Grant	5,712	8
Miami.	3,320	8

IRISH POTATOES.

COMPARATIVE YIELD.

YEAR.	Bushels.	Acres.	Average Bushels per Acre.
1889	7,783,267	79,213	98.2
1888	5,480,960	76,148	71.9
1887	2,216,130	77,306	28.6
1886	5,392,021	72,055	74.8
1885	5,801,524	74,434	77.9

Counties in the State having the largest production of Irish potatoes, 1889 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Allen	273,768	88
Vanderburgh	271,500	150
Elkhart	251,440	140
St. Joseph	219,135	105
Warrick	215,160	110

Counties producing the largest average number of bushels to the acre, 1889 :

COUNTY.	Bushels Produced	Average Bushels per Acre.
Vanderburgh	271,500	150
Adams	114,900	150
Kosciusko	206,847	141
Elkhart	251,440	140
Huntington	139,896	134

The Year 1888.

The principal Irish potato producing counties, 1888 :

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Marion	244,125	75
Allen	239,025	75
St. Joseph	186,396	84
Vanderburgh	158,130	90
Lake	153,472	64

Counties producing the largest average number of bushels per acre, 1888:

COUNTY.	Bushels.	Acres.	Average Bushels per Acre.
Wabash	113,250	755	150
Howard	97,500	780	125
Blackford	59,000	472	125
Fulton	122,496	1,056	116
Jay	100,152	963	104

SWEET POTATOES.

COMPARATIVE YIELD.

YEAR.	Bushels.	Acres.	Average Bushels per Acre
1889	194,040	2,772	70
1888	234,832	3,272	71
1887	167,387	3,214	52
1886	222,390	3,003	74
1885	183,928	2,552	72

The principal sweet-potato producing counties of the State, 1889:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Marion	15,300	68
Knox	11,500	115
Gibson	11,150	115
St. Joseph	9,900	75
Vanderburgh	9,400	100

Counties in the State producing the largest number of bushels to the acre, 1889:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Floyd	6,475	175
Fulton	1,200	150
Orange	1,596	133
Jennings	3,375	125
Knox	11,500	115

The Year 1888.

The principal sweet-potato producing counties of the State, 1888:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Marion	41,131	92
Warrick	18,300	50
Vigo	12,460	70
Spencer	8,160	85
Gibson	8,051	97

Counties producing the largest average number of bushels per acre, 1888:

COUNTY.	Bushels Produced.	Average Bushels per Acre.
Jay	2,750	125
Montgomery	1,352	104
Henry	6,936	102
Huntington	1,938	102
Vanderburgh	5,100	100

BOARD OF AGRICULTURE.

TABLE showing the Product of each Principal Crop for the 10 Years Designated, with the Average Yield per Acre, and Valuation, Compiled from the Reports of the Department of Agriculture at Washington.

PRODUCTS.	1889.	1888.	1887.	1886.	1885.	1884.	1883.	1882.	1881.	1880.	Av. Yld Price for 10 yrs
Corn, produced, bush-els	106,544,161	128,436,284	71,400,000	118,795,000	131,994,000	104,757,000	95,620,000	107,484,300	79,618,000	99,229,310	
Corn, average yield per acre, bushels . .	31.	37.5	20.	31.9	27.	29.	27.	31.3	21.8	29.	28.5
Corn, number of acres	3,418,051	3,419,377	3,569,994	3,720,681	3,720,681	3,612,312	3,511,482	3,438,332	3,657,800	3,421,700	
Corn, value per bush'l -cts	\$0.30	\$44,952.69	\$0.45	\$0.32	\$0.33	\$0.34	\$0.41	\$0.48	\$0.60	\$0.40	\$0.40
Corn, total valuation	\$31,962,648		\$32,130,000	\$38,014,400	\$38,278,260	\$35,617,380	\$39,204,200	\$51,502,464	\$47,770,800	\$39,691,720	
Wheat produced, bushels	41,541,570	28,750,764	37,828,000	40,255,000	26,659,000	33,745,000	28,447,800	45,461,800	31,353,000	49,766,758	
Wheat, average yield per acre, bushels . .	14.9	10.54	13.5	14.8	10.4	12.5	14.0	16.5	10.8	16.8	13.5
Wheat, number of acres	2,773,898	2,728,111	2,802,088	2,721,526	2,518,455	2,708,016	2,735,370	2,763,000	2,903,100	2,962,307	
Wheat, value per bushel	\$0.77		\$0.72	\$0.70	\$0.81	\$0.67	\$1.05	\$0.90	\$1.27	\$0.99	\$0.87
Wheat, total valuation	\$31,967,009	\$25,875,688	\$27,236,160	\$28,178,500	\$22,928,740	\$22,609,150	\$27,625,410	\$40,915,620	\$39,818,310	\$49,269,090	
Rye, produced, bush-els	871,266	545,425	499,000	441,000	440,597	256,000	250,743	263,940	249,000	304,638	
Rye, average yield per acre, bushels	16.	15.3	11.8	12.	14.	10.	9.9	10.8	10.2	13.3	12.3
Rye, number of acres	54,451	35,497	42,263	23,463	29,875	25,511	25,258	24,522	24,400	22,860	
Rye, value per bushel	\$0.44		\$0.54	\$0.56	\$0.59	\$0.54	\$0.65	\$0.67	\$0.93	\$0.70	\$0.62
Rye, total valuation.	\$383,334	\$381,797	\$239,460	\$168,000	\$250,252	\$138,240	\$162,963	\$176,840	\$231,570	\$212,827	
Oats produced, bush-els	28,710,935	27,493,851	27,943,000	31,798,000	27,178,000	21,742,000	21,304,100	18,853,200	15,711,000	15,710,978	
Oats, average yield per acre, bushels . .	30.2	29.3	27.	30.7	27.6	30.	29.6	26.8	23.	24.7	27.9
Oats, number of acres	950,231	937,143	1,034,923	1,034,933	1,014,630	724,736	717,560	703,490	683,000	636,072	
Oats, value per bushel	\$0.23		\$0.29	\$0.27	\$0.29	\$0.27	\$0.32	\$0.35	\$0.42	\$0.33	\$0.30
Oats, total valuation	\$6,603,515	\$7,423,340	\$3,103,470	\$8,585,460	\$6,794,500	\$5,870,340	\$6,817,312	\$6,596,620	\$6,596,620	\$5,184,623	

REVIEW OF INDIANA CROPS.

Barley produced, bushels	416,325	408,515	355,000	435,000	150,681	443,000	304,856	415,800	385,000	410,000	
Barley, average yield per acre, bushels .	21.	21.3	18.	21.	16.	21.6	19.	25.5	28.	25.	21.4
Barley, number of acres	19,825	18,913	19,698	20,735	9,186	20,530	15,792	16,280	14,800	16,400	
Barley, value per bushel	\$0.50	. . . . .	\$0.65	\$0.57	\$0.55	\$0.57	\$0.61	\$0.75	\$1.05	\$0.81	\$0.67
Barley, total valua- tion	\$208,162	\$302,636	\$230,750	\$247,950	\$82,869	\$252,510	\$187,528	\$311,850	\$401,250	\$332,100	
Buckwheat produced, bushels	89,754	91,406	68,000	92,000	63,004	80,000	70,784	88,480	79,000	106,110	
Buckwheat, average yield per acre, bush.	14.	. . . . .	8.2	10.5	11.	9.3	8.6	11.2	11.	13.5	10.8
Buckwheat, number of acres	6,411	6,675	8,312	8,749	5,790	8,566	8,158	7,920	7,200	7,860	
Buckwheat, value per bushel	\$0.50	. . . . .	\$0.67	\$0.58	\$0.65	\$0.67	\$0.90	\$0.77	\$0.99	\$0.78	\$0.72
Buckwheat, total val- uation	\$44,877	\$59,413	\$45,560	\$53,360	\$40,952	\$53,600	\$63,706	\$68,130	\$78,210	\$82,766	
Potatoes produced, bushels	7,783,267	5,480,960	3,169,000	6,779,000	5,801,524	7,015,000	8,353,412	7,227,060	2,961,910	3,469,200	
Potatoes, av'ge yield per acre, bushel . .	98.2	71.9	33.	72.	78.	76.	95.9	80.6	35.	59.	69.9
Potatoes, number of acres	79,213	76,148	96,034	94,151	74,434	92,305	87,100	89,704	84,626	58,800	
Potatoes, value per bushel	\$0.35	. . . . .	\$0.95	\$0.38	\$0.36	\$0.35	\$0.50	\$0.50	\$1.06	\$0.59	\$0.56
Potatoes, total valua- tion	\$2,724,143	\$2,740,480	\$3,010,550	\$2,576,020	\$2,088,548	\$2,455,350	\$4,176,701	\$3,613,520	\$3,139,625	\$2,046,228	
Tobacco produced, pounds	Not Rep'd	16,403,540	3,718,000	14,880,000	18,404,475	9,318,000	7,706,110	9,108,860	7,719,373	7,609,030	
Tobacco, av'age yield per acre, pounds .	Not Rep'd	. . . . .	440	60.	750.	727.	588.	806.	717.	715.	
Tobacco, number of acres	Not Rep'd	18,086	8,450	22,545	24,386	12,812	13,092	11,298	10,760	10,642	
Tobacco, value per pound	Not Rep'd	. . . . .	\$0.05	\$0.06	\$0.06	\$0.07	\$0.07	\$0.07	\$0.07	\$0.05	
Tobacco, total valua- tion	Not Rep'd	\$1,312,283	\$185,900	\$892,800	\$1,104,268	\$824,306	\$539,428	\$637,620	\$578,952	\$380,451	

Table showing the Product of each Principal Crop for 10 Years—Continued.

PRODUCTS.	1889.	1888.	1887.	1886.	1885.	1884.	1883.	1882.	1881.	1880.	Av. Yld Price for 10 yrs
Hay produced, tons*	4,172,575	2,860,338	2,591,600	3,100,000	3,610,606	2,016,000	1,831,137	1,649,633	1,374,694	1,481,760	
Hay, average yield per acre, tons . . .	1.5		1.1	1.25	1.40	1.40	1.56	1.31	1.20	1.48	1.3
Hay, number of acres	2,390,129	2,299,263	2,356,000	2,480,000	2,420,056	1,440,000	1,167,323	1,280,136	1,145,578	1,001,189	
Hay, value per ton .	c. \$8, t. \$10.5		\$10.47	\$6.50	\$7.79	\$7.30	\$10.09	\$10.09	\$12.20	\$10.30	\$9.44
Hay, total valuation*	\$37,976,217	\$35,840,456	\$27,134,052	\$20,150,000	\$28,126,620	\$14,716,800	\$16,480,233	\$14,846,697	\$16,771,267	\$15,262,128	
Acreage cultivated, total	9,692,194	9,537,213	9,937,757	10,140,060	9,817,493	8,644,788	8,311,135	8,314,682	8,531,264	8,137,830	
Valuation, total . . .	\$111,899,905	\$118,888,792	\$98,345,902	\$98,927,810	\$99,693,009	\$82,337,576	\$94,657,199	\$118,761,371	\$115,397,604	\$112,462,533	

* Both timothy and clover hay are included in the years 1885, 1886, 1887, 1888 and 1889.

MILK, BUTTER AND CHEESE.

COMPARATIVE YIELD.

YEAR.	Milk, Gallons.	Butter, Pounds.	Cheese, Pounds.
1889.	151,365,605	33,246,616	519,838
1888.	143,238,050	31,231,415	482,745
1887.	156,191,778	33,482,802	621,284
1886.	154,182,493	33,133,140	601,815
1885.	150,576,993	31,322,617	479,868

Counties in the State producing the largest quantity of milk, butter and cheese, 1889:

COUNTY.	Milk, Gallons.	COUNTY.	Butter, Pounds.	COUNTY.	Cheese, Pounds.
Marion	4,069,967	Lake	801,410	Adams	150,206
Allen	3,569,947	Marion	725,617	Allen	63,350
Lake	3,257,179	Allen	660,239	Porter	62,775
Porter	3,247,089	Noble	655,009	Lake	57,850
St. Joseph . .	2,961,320	Laporte	617,629	Clark	18,990

Counties producing the most milk, according to size, 1890:

COUNTY.	Square Miles.	Gallons.	Av. No. Gal- lons per Square Mile.
Marion	420	4,069,967	9,690
Porter	420	3,247,089	7,731
Noble	420	2,951,660	7,027
St. Joseph	450	2,961,320	6,580
Lake	500	3,257,179	6,510

Counties producing the most butter, according to size, 1889:

COUNTY.	Square Miles.	Pounds Produced.	Av. Pounds per Square Mile.
Marion	420	725,617	1,727
Dearborn	291	489,004	1,680
Lake	500	801,410	1,602
Noble	420	655,009	1,559
Henry	400	598,495	1,497

Counties producing the most cheese, according to size, 1889 :

COUNTY.	Square Miles.	Pounds Produced.	Av. Pounds per Square Mile.
Adams	360	150,206	417
Porter	420	62,775	149
Lake	500	57,850	115
Allen	670	63,350	94
Clark	367	18,990	51

The Year 1888.

Counties in the State producing the largest quantity of milk, butter and cheese, 1888 :

COUNTY.	Milk, Gallons.	COUNTY.	Butter, Pounds.	COUNTY.	Cheese, Pounds.
Marion.	4,497,525	Marion	710,480	Adams	142,857
Allen	3,663,266	Allen	705,352	Porter.	82,250
Porter	2,965,558	Marshall	584,265	Lake	39,819
Noble	2,704,693	Clinton	582,010	Clark	21,715
Randolph	2,704,692	St. Joseph.	575,308	Dekalb	18,556
Delaware.	2,626,253	Elkhart.	573,663	Miami.	12,411
Lake	2,610,934	Noble.	548,053	Kosciusko	11,948
Marshall	2,558,840	Lagrange	532,020	Wells	11,296
Henry	2,516,615	Wayne	526,671	Ripley	11,263
Kosciusko	2,501,885	Lake	515,484	Greene	9,715

Counties producing the most milk, according to size, 1888 :

COUNTY.	Square Miles.	Gallons.	Average No. Gal. per Sq. Mile.
Marion	420	4,497,525	10,708
Porter	420	2,965,558	7,060
Delaware	399	2,626,253	6,582
Noble	420	2,704,693	6,439
Hanocck.	307	1,939,041	6,316

LIVE STOCK.

49

Counties producing the most butter, according to size, 1888:

COUNTY.	Square Miles,	Pounds.	Average No. of Lbs. per Sq. Mile.
Marion	420	710,480	1,691
Hancock	307	459,256	1,495
Clinton	408	582,010	1,426
Lagrange	388	532,020	1,422
Steuben	330	461,839	1,399

Counties producing the most cheese, according to size, 1888:

COUNTY.	Square Miles.	Pounds.	Average No. of Lbs. per Sq. Mile.
Adams.	360	142,857	396
Porter.	420	82,250	198
Lake	500	39,819	79
Clark	367	21,715	59
Dekalb.	370	18,556	50

CATTLE AND HOGS.

YEAR.	Total No. of Cattle in State.	Total No. of Fatted Hogs in State.
1889	1,420,891	2,211,157
1888	1,360,399	2,057,210
1887	1,303,150	2,196,068
1886	1,251,428	1,761,529
1885	1,183,365	1,698,585

NOTE.—Stock hogs are not included in the above totals.

Counties having the largest number of cattle and hogs, 1889 :

COUNTY.	Number Cattle.	COUNTY.	Number Hogs.
Allen	27,896	Montgomery	58,622
Putnam.	26,035	Hendricks	51,267
Montgomery	25,010	Randolph	50,500
Laporte.	23,053	Hamilton	48,932
Marion	22,383	Rush	44,516

BOARD OF AGRICULTURE.

Counties in the State having the largest number of cattle, according to area, 1889 :

COUNTY.	Number Cattle.	Number to Sq. Mile.
Hendricks	22,226	75
Putnam	26,035	53
Marion	22,383	53
Wayne	21,031	53
Johnson	16,324	52

Counties in the State having the largest number of hogs, according to area, 1889 :

COUNTY.	Number Hogs	Number to Sq. Mile.
Hendricks	51,267	131
Hamilton	48,932	122
Montgomery	58,622	117
Howard	34,358	116
Randolph.	50,500	113

The Year 1888.

Counties having the largest number of cattle and hogs, 1888 :

COUNTY.	Number Cattle.	COUNTY.	Number Hogs.
Allen	26,869	Montgomery	58,140
Randolph	24,672	Rush	49,150
Jasper	22,737	Grant	45,251
Montgomery	22,541	Clinton	44,350
Lawrence	22,201	Hamilton	44,097

Counties in the State having the largest number of cattle, according to area, 1888 :

COUNTY.	No. Cattle.	No. to Square Mile.
Hendricks	21,571	55
Putnam	24,672	50
Noble	20,197	48
Benton.	18,295	48
Howard	13,459	45

LIVE STOCK.

51

Counties in the State having the largest number of hogs, according to area, 1888:

COUNTY.	No. Hogs.	No. to Square Mile.
Rush.	49,150	118
Montgomery	58,140	115
Tipton	29,208	112
Hamilton.	44,097	110
Grant	45,251	108

HORSES AND MULES.

YEAR.	Total No. Horses in State.	Total No. Mules in State.
1889	593,275	62,426
1888	585,707	60,185
1887	533,257	56,989
1886	513,970	57,283
1885	512,394	57,739

Counties in the State having the largest number of horses and mules, 1889:

COUNTY.	No. Horses.	COUNTY.	No. Mules.
Marion	11,701	Marion	3,129
Allen	11,165	Vanderburgh	2,426
Tippecanoe	10,305	Gibson	1,946
Elkhart.	10,304	Jackson	1,873
Hamilton.	10,208	Posey	1,831

Counties having the largest number of horses, according to area, 1889:

COUNTY.	No. of Horses.	No. of Square Miles.
Marion.	11,701	27
Hamilton.	10,208	25
Benton.	9,626	25
Wayne.	9,259	23
Delaware.	8,906	22

Counties in the State having the largest number of mules to the square mile, 1889:

COUNTY.	No. Mules.	No. to Square Mile.
Vanderburgh	2,426	10
Marion	3,129	7.4
Warrick	1,824	4.7
Posey	1,831	4.3
Gibson	1,946	4.1

The Year 1888.

Counties having the largest number of horses and mules, 1888 :

COUNTY.	No. Horses.	COUNTY.	No. Mules.
Allen	11,896	Marion	3,080
Marion	10,370	Vanderburgh	2,398
Tippecanoe	10,217	Posey	2,058
Elkhart	9,997	Warrick	1,725
Boone	9,983	Jackson	1,718

Counties in the State having the largest number of horses, according to area, 1888:

COUNTY.	No. Horses.	No. to Square Mile.
Marion	10,370	24
Boone	9,983	23
Hamilton	9,298	23
Elkhart	9,997	21
Clinton	8,911	21

Counties in the State having the largest number of mules to the square mile, 1888:

COUNTY.	No. Mules.	No. to Square Mile.
Vanderburgh	2,398	9.9
Marion	3,080	7.3
Posey	2,058	4.9
Warrick	1,725	4.4
Jackson	1,718	3.5

LIVE STOCK.

53

SHEEP AND LAMBS.

YEAR.	Total in State.	Average to Square Mile.
1889.	954,458	26
1888.	1,266,109	35
1887.	1,394,045	38
1886.	1,401,612	38
1885.	1,295,495	36
1884.	1,508,713	42
1883.	1,497,362	41

Counties in the State producing the largest number of sheep and lambs, 1889 :

COUNTY.	Total Number.	Average to Sq. Mile.
Elkhart	30,734	65
Lagrange.	30,548	78
Steuben.	28,475	86
Noble	26,323	62
Owen.	25,299	64

The Year 1888.

Counties in the State producing the largest number of sheep and lambs, 1888 :

COUNTY.	Total Number.	Average to Sq. Mile.
Elkhart	41,014	86
Lagrange.	40,384	104
Steuben	35,422	107
Dekalb.	34,269	92
Allen	33,974	50

The Year 1887.

Counties in the State producing the largest number of sheep and lambs, 1887 :

COUNTY.	Total Number.	Average to Sq. Mile.
Elkhart	48,789	103
Lagrange.	47,213	121
Steuben	39,689	120
Owen.	38,835	98
Dekalb.	36,088	97

DEATH OF DOMESTIC ANIMALS.

Statement Showing the Number of Sheep Killed by Dogs, and Death of Cattle, Hogs, Horses and Mules During the Years 1887, 1888 and 1889.

COUNTIES.	NUMBER OF SHEEP KILLED BY DOGS.		NUMBER OF CATTLE DYING.		NUMBER OF HORSES DYING.		NUMBER OF HOGS DYING.		NUMBER OF MULES DYING.				
	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.	1889.	1888.	1887.		
Adams	181	296	128	250	157	130	127	3,030	4,513	4,448	2	6	1
Allen	509	401	429	619	339	335	501	3,768	4,600	14,913	6	8	13
Bartholomew	578	776	1,110	383	174	150	420	2,232	4,396	4,180	47	43	130
Benton	85	116	89	239	260	238	162	1,423	2,884	3,880	16	5	12
Blackford	290	227	245	77	48	87	134	. . . .	3,582	4,296	3	. . . .	5
Boone	337	168	167	396	268	151	215	6,231	9,531	11,156	13	2	23
Brown	156	106	135	86	20	48	76	163	538	469	19	12	21
Carroll	313	284	143	396	182	222	162	4,799	4,848	10,129	10	4	10
Cass	348	453	217	339	196	200	77	3,713	3,735	5,786	12	4	23
Clark	397	378	417	383	173	123	109	1,341	1,920	1,922	15	18	15
Clay	163	145	675	414	162	119	191	1,555	1,822	1,994	42	29	25
Clinton	412	800	1,090	302	216	221	232	3,380	3,345	11,126	12	1	10
Crawford	42	80	145	90	27	223	78	86	390	268	16	10	23
Davies	352	231	560	259	168	196	180	1,493	3,149	4,600	10	19	18
Dearborn	186	169	191	106	118	138	67	863	922	647	10	19	11
Decatur	109	220	241	314	240	178	212	8,322	3,320	9,567	29	17	15
Dekalb	336	316	235	181	125	127	111	1,152	1,320	2,451	5	. . . .	7
Delaware	632	569	464	371	286	338	329	5,488	7,545	14,599	12	14	2
Dubois	188	224	421	320	79	105	96	3,566	2,691	2,723	29	20	7
Elkhart	501	671	445	94	87	92	78	1,841	5,102	2,318	8	7	7
Fayette	132	189	207	85	158	155	132	2,245	2,919.	7,642	16	5	10
Floyd	35	60	29	70	82	45	39	133	125	191	5	15	9
Fountain	827	707	803	278	236	148	198	1,451	3,570	11,967	10	10	35
Franklin	287	400	608	275	217	195	227	9,159	5,387	9,201	13	21	26
Fulton	232	517	319	310	168	165	125	4,227	4,231	6,926	10	6	7

DEATH OF DOMESTIC ANIMALS.

55

Gibson	461	873	1,019	372	320	475	211	201	175	5,816	10,057	10,471	40	97	27
Grant	259	299	129	320	382	398	294	248	233	2,245	8,456	18,518	14	11	16
Greene	1,076	923	986	451	513	434	458	190	221	2,064	2,530	4,738	22	20	26
Hamilton	354	441	269	201	260	279	264	202	207	3,644	4,820	11,177	15	9	17
Hancock	245	233	174	237	240	297	236	321	324	4,331	3,386	11,549	10	.	12
Harrison	436	451	419	293	205	222	245	261	164	1,049	1,453	1,633	10	10	12
Hendricks	657	868	428	261	281	271	173	208	161	2,973	4,593	10,354	14	30	13
Henry	351	166	423	294	284	502	274	300	282	6,667	8,570	10,527	13	3	31
Howard	134	140	163	238	309	337	260	182	138	3,664	6,871	9,240	7	3	12
Huntington	267	188	998	262	315	423	315	247	265	4,477	6,385	12,698	4	12	15
Jackson	288	436	381	269	278	251	130	124	103	1,804	2,682	6,347	27	85	21
Jasper	61	80	71	510	516	497	257	198	199	472	677	862	10	4	13
Jay	246	307	194	303	303	345	216	102	273	2,780	3,582	2,835	10	4	6
Jefferson	79	129	131	92	67	117	55	54	55	341	664	694	16	2	23
Jennings	254	176	72	210	271	247	135	162	124	1,010	1,136	1,684	12	7	18
Johnson	310	296	194	267	285	270	255	178	258	3,107	3,695	10,096	11	8	32
Knox	358	551	466	314	372	634	340	279	283	7,915	9,611	10,126	27	27	33
Kosciusko	213	282	481	302	377	270	263	127	124	2,324	2,679	436	6	10	10
Lagrange	161	143	154	152	164	180	121	125	98	1,288	1,017	896	2	1	5
Lake	71	64	111	242	276	264	188	180	125	683	713	706	4	4	15
Laporte	166	94	258	348	375	619	529	321	271	1,573	4,811	11,688	8	3	8
Lawrence	407	277	550	237	223	262	183	159	90	2,023	1,798	1,969	17	12	10
Madison	314	264	324	272	202	295	251	225	218	4,017	5,371	10,789	10	11	6
Marion	366	296	275	354	310	510	190	375	425	2,049	7,540	8,710	14	.	60
Marshall	375	478	224	257	307	360	213	171	149	4,717	4,458	3,636	7	5	10
Martin	307	239	599	149	183	242	113	108	88	1,236	1,996	940	6	18	13
Miami	84	158	123	345	238	494	220	224	201	4,704	9,973	17,619	7	5	7
Monroe	201	268	835	137	187	184	97	90	88	347	930	755	14	6	28
Montgomery	371	370	706	418	309	498	278	398	355	5,854	11,950	15,195	11	15	17
Morgan	186	195	205	235	238	281	197	193	173	1,768	2,332	7,547	12	18	12
Newton	81	267	10	273	302	385	128	143	159	1,056	375	576	13	4	10
Noble	150	175	104	197	224	174	194	154	247	2,767	2,804	2,051	5	1	10
Ohio	14	84	143	37	51	40	30	21	14	79	118	144	7	2	11
Orange	256	290	378	157	186	244	88	153	106	396	1,649	904	11	10	14
Owen	370	482	404	344	308	312	159	41	145	1,281	2,099	2,231	9	8	25
Parke	282	309	243	246	205	303	176	197	182	1,427	2,483	9,003	14	13	21
Perry	242	197	356	216	232	243	103	125	175	816	1,404	822	16	15	13
Pike	306	482	856	321	312	250	145	174	140	1,922	3,124	3,672	28	17	21
Porter	162	253	487	234	211	197	113	87	89	246	519	530	9	2	11
Posey	103	197	412	215	200	259	180	121	141	2,539	3,502	5,170	43	27	23

DEATH OF DOMESTIC ANIMALS—Continued.

NUMBER OF CATTLE DYING.			NUMBER OF HORSES DYING.			NUMBER OF HOGS DYING.			NUMBER OF MULES DYING.		
1889.	1888.	1887.	1889.	1888.	1887.	1889.	1888.	1887.	1889.	1888.	1887.
228	216	528	168	146	253	1,020	512	1,013	13	5	14
372	351	359	230	205	219	1,722	3,762	3,394	12	12	26
349	354	466	253	281	264	11,702	7,510	10,190	9	9	11
163	210	232	77	384	123	674	689	658	10	13	13
302	230	273	302	340	356	5,459	7,450	17,053	8	...	13
66	126	125	31	57	61	308	316	462	19	8	23
323	397	441	314	330	234	2,356	3,746	8,236	17	11	10
158	274	340	188	194	174	2,215	1,687	1,489	26	22	20
180	265	179	85	64	...	416	914	464	4	3	11
104	94	136	94	99	...	1,283	709	589	4	1	3
270	295	376	261	215	291	1,550	3,592	5,845	7	2	13
355	361	442	270	275	173	3,857	4,670	5,696	10	3	10
87	72	76	56	102	55	116	235	317	16	7	16
320	399	427	434	315	450	3,373	4,302	5,556	12	10	46
168	250	379	151	167	173	2,067	2,806	5,451	15	6	21
91	84	96	33	45	64	2,443	3,859	5,265	3	3	4
183	171	143	97	113	124	2,528	1,362	1,384	47	54	38
353	297	183	143	158	109	1,284	1,893	4,948	11	8	18
322	314	341	311	296	254	1,962	2,491	4,576	26	13	15
303	373	466	219	243	232	6,654	7,152	8,357	16	2	23
333	377	238	170	179	239	1,103	8,440	5,188	13	4	16
236	291	479	253	124	199	1,396	1,874	3,209	42	23	26
126	214	178	171	80	73	828	353	1,649	13	13	13
375	338	373	290	267	275	11,596	10,801	11,479	12	5	15
208	250	242	169	168	186	3,853	6,141	6,402	9	4	12
346	379	334	256	204	220	973	1,517	2,838	11	9	13
191	335	241	163	134	165	2,832	2,751	2,778	8	2	6
Whitley	364	444	156	...	...	...	...	...	1,386	1,084	1,400
Total	25,245	28,350	31,800	...	...	512,692	323,359	...	...	...	...

FENCING AND DRAIN TILE.

Statement Showing by Counties the Number of Rods of Rail, Board and Wire Fencing Erected in 1889, and the Number of Rods of Drain Tile Laid and in Operation in the Same Period.

COUNTIES.	Rods of Rail Fenc'g Erected in 1889.	Rods of Board Fenc'g Erected in 1889.	Rods of Wire Fenc'g Erected in 1889.	Rods of Drain Tile Laid in 1889.	Total Rods Drain Tile in Opera- tion in 1889.	Total Rods Drain Tile in Opera- tion in 1888.
Adams	31,078	8,056	2,359	69,432	522,104	452,672
Allen	17,908	12,873	13,835	69,658	619,084	549,426
Bartholomew	9,089	2,938	4,768	10,136	422,796	412,659
Benton	1,535	3,055	16,693	107,113	438,164	331,051
Blackford	6,878	1,744	3,262	32,827	297,668	274,841
Boone	30,010	9,259	11,511	96,42	867,828	771,403
Brown	18,835	1,173	1,091	122	8,649	8,527
Carroll	34,846	10,856	13,544	31,891	480,626	448,735
Cass	31,443	6,777	13,196	37,168	560,962	523,794
Clark	10,218	2,549	10,553	1,994	14,572	12,578
Clay	45,302	8,387	11,148	4,802	16,614	11,812
Clinton	21,536	9,910	10,322	85,258	1,012,346	927,088
Crawford	27,624	788	2,335	260	790	530
Daviess	61,740	3,633	5,017	12,022	87,506	75,484
Dearborn	26,131	5,473	17,439	16	5,178	5,162
Decatur	18,526	4,590	11,687	31,143	814,568	783,425
Dekalb	75,415	6,828	4,391	40,055	274,996	234,941
Delaware	210,190	22,032	7,994	53,664	508,599	454,935
Dubois	63,303	3,834	2,218	5,086	10,405	5,319
Elkhart	57,220	22,468	18,318	83,421	312,873	229,452
Fayette	30,424	12,772	7,433	4,535	133,558	129,023
Floyd	1,963	1,898	6,165	856	17,009	16,153
Fountain	34,595	12,069	13,115	38,807	399,996	361,189
Franklin	93,286	5,905	10,545	5,288	291,513	286,225
Fulton	17,163	13,249	68,416	20,011	175,097	155,086
Gibson	26,334	17,172	42,982	9,427	239,042	229,615
Grant	26,963	7,190	12,549	78,940	905,798	826,858
Greene	48,497	21,992	13,724	7,229		46,747
Hamilton	15,017	10,186	8,224	44,907		738,936
Hancock	11,078	3,342	25,265	37,325		637,956
Harrison	29,936	5,375	5,001			3,793
Hendricks	13,399	5,666	10,871	37,107		511,058
Henry	34,504	14,693	38,780	55,328		563,249
Howard	19,242	11,794	14,965	32,753		670,238
Huntington	20,856	7,784	20,088	85,081		522,717
Jackson	59,907	15,437	11,051	6,235		35,772
Jasper	10,800	7,614	47,656	20,399		38,958
Jay	29,887	7,788	5,486	32,388		519,130
Jefferson	40,566	6,873	6,517	224		4,652
Jennings	13,744	4,233	9,853	3,015		19,504
Johnson	19,701	7,419	12,979	16,400		439,360
Knox	26,575	13,607	17,723	17,902		72,686
Kosciusko	45,591	8,586	16,217	56,964		211,739
Lagrange	8,270	2,930	8,535	6,303		35,523
Lake	4,264	3,530	33,397	8,484		27,525

FENCING AND DRAIN TILE—Continued.

COUNTIES.	Rods of Rail Fenc'g Erected in 1889.	Rods of Board Fenc'g Erected in 1889.	Rods of Wire Fenc'g Erected in 1889.	Rods of Drain Tile Laid in 1889.	Total Rods Drain Tile in Opera- tion in 1889.	Total Rods Drain Tile in Opera- tion in 1888.
Laporte.	14,637	11,606	35,184	11,417		14,462
Lawrence	20,733	4,512	4,380	192		7,208
Madison	25,938	8,156	5,607	63,220		530,448
Marion	22,392	11,973	23,933	20,058		740,500
Marshall	16,973	11,722	19,442	19,665		161,045
Martin	51,583	4,534	4,269	2,145		11,766
Miami	22,231	4,842	11,596	51,362		558,318
Monroe	28,815	7,292	3,499	1,664		13,694
Montgomery	34,118	6,861	15,425	67,438		462,883
Morgan	33,684	8,776	11,063	14,320		197,886
Newton	680	1,464	19,544	33,371		99,368
Noble	21,125	8,614	7,386	26,324		164,167
Ohio	3,950	113	6,429			375
Orange	10,587	7,265	6,619	1,070		6,827
Owen	18,447	3,530	5,804	2,310		5,374
Parke	37,305	8,040	12,059	13,989		191,533
Perry	36,555	6,575	6,725	220		1,586
Pike	12,587	7,200	8,879	647		10,984
Porter	12,378	6,536	8,764	3,976		11,533
Posey	16,630	4,610	29,564	11,158		200,408
Pulaski	11,364	3,484	33,363	15,357		66,675
Putnam	30,027	9,158	10,423	17,584		170,086
Randolph	26,181	11,582	19,814	61,600		842,545
Ripley	22,726	3,630	7,557	4,463		12,768
Rush	23,716	6,392	10,654	28,929		744,129
Scott	4,153	1,427	6,634	4,725		47,848
Shelby	10,420	6,767	13,060	18,105		694,408
Spencer	26,416	6,000	6,463	2,795		28,852
Starke	4,928	1,812	37,233	600		9,256
Steuben	37,822	8,144	17,262	45,548		102,487
St. Joseph	18,780	9,836	26,392	13,927		114,645
Sullivan	19,706	2,018	15,755	3,515		47,863
Switzerland	5,993	332	7,592			2,690
Tippecanoe	15,888	19,339	18,862	40,829		419,136
Tipton	29,492	5,774	5,599	33,653		492,399
Union	974	3,356	6,128	5,202		218,551
Vanderburgh	592	969	3,251	3,101		101,458
Vermillion	7,772	3,165	8,264	9,217		173,156
Vigo	21,755	26,761	27,142	11,310		36,644
Wabash	15,742	8,337	14,132	18,509		844,714
Warren	2,795	3,044	5,489	25,486		173,361
Warrick	22,441	7,365	9,249	4,764		76,031
Washington	32,798	6,107	6,697	1,084		21,567
Wayne	36,016	11,421	26,862	25,763		375,182
Wells	24,924	7,843	8,878	81,947		725,940
White	21,137	7,250	51,888	65,437		138,955
Whitley	17,351	8,706	11,374	39,124		293,604
Total	2,384,667	790,667	1,311,316	2,345,521		24,443,548

ORGANIZATION OF THE BOARD.

JANUARY 10, 1889.

The Board organized by electing W. B. Seward temporary chairman.

On motion of Mr. Mitchell the Board proceeded to the election of officers for the ensuing year, with the following result:

President—Jasper N. Davidson, Montgomery County.

Vice President—W. A. Banks, Laporte County.

Secretary—Alex. Heron, Marion County.

Treasurer—Sylvester Johnson, Marion County.

General Superintendent—Chas. E. Merrifield, Marion County.

Executive Committee—Messrs. E. H. Peed, W. B. Seward, R. M. Lockhart and Robert Mitchell.

Treasurer Johnson made a statement detailing the obligations of the Board.

On motion of Mr. Mitchell it was decided to place a short-time loan for \$6,000 to bridge over difficulties until after the meeting of the Legislature.

The time for holding the next fair was fixed for September 23, 1889.

The Executive Committee was instructed to investigate the request of the Citizens' Street Railway Company to allow them to lay a track along the south side of the State Fair Grounds, connecting Alabama street with their Central avenue line.

Messrs. Seward, Heron, Johnson and Merrifield were appointed to draft and present a bill to the Legislature for the relief of the State Board.

Board adjourned to February 19, 1889.

STATE BOARD MEETINGS, 1889.

FEBRUARY MEETING.

FEBRUARY 19.

The Board convened at 10 A. M., with President Davidson in the chair; present: Messrs. Mitchell, Berry, Sieg, Seward, Officer, Dick Jones, Peed, Dungan, Nelson, Lloyd S. Jones, Boggs, Clemens, McClung, Banks and Lockhart.

Messrs. Seward and Berry, the Secretary and General Superintendent, were directed to draft a bill, protecting the Board from having streets or alleys forced by the city of Indianapolis through the State Fair Grounds, and present it to the Legislature.

The General Superintendent was directed to have the Exposition building re-spouted.

Messrs. Seward and Jones, the President and Secretary were appointed to select a lithograph poster.

Ordered, that the aggregate amount of premiums be fixed the same as last year, except in the speed class.

The Board assented to the proposition of the State Horticultural Society, to have their proceedings bound with those of the State Board.

Mr. Seward's motion to abolish all sweepstake premiums on stock, except on herds, was lost.

The communication from the American Shorthorn Herd Book Association, offering special premiums of \$250 for Shorthorn milkers, was discussed and tabled.

A new department was created, to be known as "Superintendent of Stalls," the position to be filled by a member of the Board.

Adjourned.

FEBRUARY 20.

Board met at 10 A. M., President Davidson in the chair.

Mr. Lockhart offered the following:

Resolved, That it is ordered by this State Board of Agriculture that the Citizens' Street Railway Company shall have the right granted to them to lay a double track along the south side of the grounds from the center of Alabama street to Central avenue, said tracks not to occupy more than forty feet off of said grounds, the distance to be measured from the center of the State ditch; and that a committee consisting of the President, Secretary, General Superintendent and Messrs. Seward, Berry and Clemans make the said contract and report to-morrow morning for the approval of the Board.

The resolution was adopted.

The President announced the following superintendents of departments: Horse Department, Draft and General Purpose Horses and Mules, E. H. Peed; Speed Ring and Light Harness, Dick Jones; Cattle Department, Beef Breeds, Thos. Nelson; Dairy Breeds, J. Q. A. Sieg; Hog Department, V. K. Officer; Sheep Department, S. W. Dungan; Stalls and Stall Rents, W. A. Banks; Poultry Department, Lloyd S. Jones; Farm and Garden Products, J. A. McClung; Horticultural Department, R. M. Lockhart; Mechanical Department, Robert Mitchell and B. F. Clemans; Engines and Lower Floor, W. B. Seward; Upper Floor, Women's State Fair Association and W. B. Seward; Geology and Natural History, Prof. S. S. Gorby, State Geologist; Gates, J. M. Boggs; Amphitheater, W. W. Berry.

The lease of the grounds to the Citizens' Street Railway Company was submitted by the special committee appointed to prepare the same, and was adopted by the Board.

The General Superintendent was instructed to inclose with a substantial fence the southwest corner of the grounds.

The proposition of the American Shorthorn Herd Book Association to give special premiums for Shorthorn milkers was adopted.

Adjourned.

FEBRUARY 21.

The Board met pursuant to adjournment, with President Davidson in the chair. The joint-communication from the State Florists and State Horticultural Society, asking that the Board erect a new hall on the Fair grounds for the display of horticultural and floral products, was referred to the Executive Committee.

Messrs. Sieg, Seward and Boggs were appointed a committee on officers' and employes' salaries.

The special committee on Woman's Department of the Fair reported recommending that the office of President of the Association rotate, no one member being allowed to hold the office more than two years in succession. That no department superintendent be allowed to act as judge, or in any manner interfere with awarding committees. That after this year the Woman's Department be under the supervision of a member of the Board of Agriculture. That all salaries in this department be fixed by the Board. The report was unanimously adopted.

Hons. Jasper N. Davidson and W. A. Banks were nominated to the Governor for appointment as Trustees to Purdue University. .

The acceptance of the new race track from the contractor was delegated to the Executive Committee.

The same amount of money as last year was appropriated to the ladies' department.

The Committee on Salaries reported, making no material changes from last year.

Mr. Clemans, the Secretary and General Superintendent were authorized to lease to the Oliver Chilled Plow Co. certain ground upon which to erect a "Building and Exhibit," providing there were no legal obstacles in the way.

On motion of Mr. Boggs the superintendents of departments were instructed to select their own committeemen.

The Secretary was instructed to continue the Board's membership in the Central State Fair Association, also in the American Trotting Association.

Board adjourned.

APRIL 2.

The Board met on special call of President Davidson for the purpose of nominating to the Governor three men to constitute a Sanitary Live Stock Commission, in accordance with a recent enactment of the Legislature.

President Davidson stated the object of the meeting and authorized any one present to present the names of gentlemen as candidates for the positions. The nominations were:

Judge J. S. Buckles, of Delaware County; Adams Earl, of Tippecanoe County; William O. Jackson, of St. Joseph County; Dr. Jonas Good, of Huntington County; Samuel Bowman, of St. Joseph County; H. G. O. Bals, of Marion County; Sid. Conger, of Shelby County; George Hall, of Rush County; Samuel Hargrove, of Gibson County, and Joshua Strange, of Grant County.

The Secretary was instructed not to advertise evening entertainments at the coming fair.

The coop rent in the poultry department was continued for 1889.

The flock prize of a gold cup offered by the English Shropshire Association was accepted.

The Board proceeded to select from the candidates presented in the forenoon the three men to constitute the Sanitary Live Stock Commission, with the following result:

Adams Earl, of Tippecanoe County, to serve four years; Samuel Bowman, of St. Joseph County, to serve three years; George Hall, of Rush County, to serve two years.

The letting of the track to the Indiana Trotting and Pacing Horse Breeders' Association, by Superintendent Merrifield, under certain restrictions, was ratified.

Board Adjourned.

EXECUTIVE COMMITTEE MEETING.

AUGUST 22. . .

The Executive Committee met on call of President Davidson. Present, Messrs. Mitchell, Lockhart and Peed.

The bid of the Terre Haute Band to furnish State Fair music for \$250 was accepted.

It was ordered that space in the main hall of the Exposition building be devoted entirely to exhibition purposes, except in a few instances where privileges were already sold.

The General Superintendent was instructed to purchase a "Race Track Combination Time Board" and other necessary equipments to a first-class race course.

The price of amphitheatre tickets was placed at 15 cents.

John Mitchell, of Gibson County, was tendered the scholarship in the New York Veterinary College.

The General Superintendent was instructed to have made numerous improvements on the Fair Grounds, and the President and Secretary to order all necessary advertising matter.

Adjourned.

EXPOSITION MEETINGS.

SEPTEMBER 23.

The Board met pursuant to adjournment at the February meeting, with Vice President Banks in the chair. A call of the roll showed all members present except President Davidson and W. W. Berry, who arrived before adjournment, making a full Board.

The Secretary was authorized to sell exhibitors' tickets, to exhibitors competing for premiums, at one dollar, and to employ a clerk to sell the tickets.

The Secretary was instructed to sign for the Board the remonstrance against laying an asphalt pavement on Central avenue.

The Shorthorn milk test was referred to the Superintendent of the Cattle Department.

Department superintendents were authorized to furnish their committeemen with exhibitors' tickets.

Adjourned.

SEPTEMBER 24.

The Board met and President Davidson called for pending business.

The agreement with the W. C. T. U., in regard to cottage on the Fair ground, was ordered carried out, the same as the year previous.

Other matters and minor details regarding the conduct of the Fair came up and were disposed of, after which the Board adjourned.

SEPTEMBER 25.

Board met. President Davidson announced a quorum and Mr. Dick Jones moved that the day's programme be postponed on account of rain. The motion brought out a spirited discussion, engaged in by all members present. It was finally

voted to carry out the published programme, except in the speed class, which was declared off on account of the heavy condition of the track.

Adjourned.

SEPTEMBER 27.

Board met, President Davidson in the chair. The Treasurer was instructed to sell tickets for 25 cents on Saturday to witness postponed races.

Mr. Officer offered the following resolution, which was referred to the January meeting :

WHEREAS, It is important that the World's Fair of 1892 be held in the West to get the best live stock and agricultural show, and,

WHEREAS, We deem Chicago the most suitable and desirable place for this Centennial Exposition; therefore, be it

Resolved, That we urge upon our Congressmen to give their hearty support and endorsement to Chicago as the location for the 1892 Exposition.

The Treasurer was instructed to begin paying the premiums promptly at 3 o'clock p. m. Gatekeepers were allowed to include in their bills actual railroad fare.

Adjourned.

SEPTEMBER 28.

Board met pursuant to adjournment, with President Davidson in the chair.

A motion to appoint three delegates to the Central Fair Circuit was lost.

The President and Secretary were authorized to extend leases to the Oliver Chilled Plow Company and the Hoosier Drill Company, granting them additional space for their buildings. All leases were left to the discretion of the President, Mr. Seward and the Secretary.

Adjourned.

EXECUTIVE COMMITTEE MEETING.

OCTOBER 31.

The committee met on call of the President. Present, Messrs. Davidson, Mitchell, Lockhart, Peed and Seward.

A resolution by Mr. Lockhart extending to Mr. Dick Jones the sympathies of the committee, and expressing the hope that no permanent disability shall result from the recent accident to him, wherein he had his arm broken, was adopted.

A number of miscellaneous awards in the woman's department were allowed and ordered paid. Amount, \$12.

A proposition from State Auditor Carr and Mr. Reed to lease stalls on the fair grounds was accepted.

Secretary Heron and Messrs. Lockhart and Banks were appointed delegates to the meeting of Fair Managers at Cleveland, O., November 27.

Attorney J. L. Mitchell was allowed \$40 for legal services.

The stake race premium for two-year-olds, amounting to \$100, claimed by Carr and Reed, was referred to J. H. Steiner, Secretary of the National Trotting Association, for adjudication.

The programme for the annual meeting in January was arranged and adopted.

Adjourned.

ANNUAL MEETING, 1890.

JANUARY 7, 10:30 A. M.

The Thirty-eighth Annual Convention of the Delegate Board of Agriculture met in the lecture room of the Board, State House, with Hon. Jasper N. Davidson in the chair. The Clerk immediately proceeded with the roll-call. Districts were represented as follows:

- 1st District—ROBERT MITCHELL, Princeton, Gibson County.
- 2d District—
- 3d District—J. Q. A. SIEG, Corydon, Harrison County.
- 4th District—W. B. SEWARD, Bloomington, Monroe County..
- 5th District—V. K. OFFICER, Volga, Jefferson County.
- 6th District—DICK JONES, Columbus, Bartholomew County.
- 7th District—E. H. PEED, New Castle, Henry County.
- 8th District—S. W. DUNGAN, Franklin, Johnson County.
- 9th District—THOMAS NELSON, Bloomingdale, Parke County.
- 10th District—J. N. DAVIDSON, Whitesville, Montgomery County.
- 11th District—LLOYD S. JONES, Warren, Huntington County.
- 12th District—JOHN M. BOGGS, Lafayette, Tippecanoe County.
- 13th District—B. F. CLEMANS, North Manchester, Wabash County.
- 14th District—J. A. McCLUNG, Rochester, Fulton County.
- 15th District—W. A. BANKS, Laporte, Laporte County.
- 16th District—R. M. LOCKHART, Waterloo, Dekalb County.

The call of County Societies showed:

DELEGATES PRESENT.

COUNTY.	DELEGATE.	POST-OFFICE.
Bartholomew.	Dick Jones.	Columbus.
Carroll.	Z. Hunt.	Camden.
Clark.	H. F. Work	New Washington.
Clinton.	M. H. Belnap	Jefferson.
Decatur	Edward Kessing	Adams.
Delaware.	Eli Ogle.	Muncie.
Elkhart	E. D. Chipman.	Goshen.
Fulton	S. C. Davidson	Rochester.
Gibson	R. M. Mumford	Princeton.
Grant	J. L. Thompson	Marion.
Hancock	Marion Steele	Greenfield.
Harrison.	J. W. McKinster.	Corydon.
Henry	J. S. Hedges.	New Castle.
Howard	W. J. Floyd	Middle Fork.
Huntington.	L. T. Bagley.	Huntington.
Jay	Elijah Lyons.	Boundary.
Jefferson	V. K. Officer.	Volga.
Jennings	J. B. Smith	Queensville.
Johnson	Dr. W. M. Province	Providence.
Knox	M. O'Donnell	Vincennes.
Lake.	J. H. Buck	Laporte.
Laporte	W. A. Banks.	Laporte.
Madison	Wm. Crim.	Anderson.
Marion.	E. J. Howland.	Indianapolis.
Monroe.	A. E. Johnson	Ellettsville.
Montgomery	F. L. Snyder.	Crawfordsville.
Noble	Orlando Kimmell	Kimmell P. O.
Owen.	W. M. Franklin	Spencer.
Parke	James A. Allen	Rockville.
Perry.	John C. Shoemaker.	Indianapolis.
Posey	Robert Mitchell	Princeton.
Putnam	J. W. Robe	Greencastle.
Rush.	F. A. Capp	Rushville.
Shelby	J. R. Tomlinson	Shelbyville.
Spencer.	J. S. Wright.	Rockport.
Steuben	Frank McCartney	Angola.
Sullivan	James M. Lang	Graysville.
Tippecanoe.	Albert Henderson	Lafayette.
Tipton	Wm. Barlow.	Tipton.
Wabash	B. F. Clemans	Manchester.
Warren.	Wm. H. Goodwine	West Lebanon.
Warrick	Robert Mitchell	Princeton.
Washington.	W. W. Stevens.	Salem.
Wayne.	J. C. Ratliff	Richmond.

The District Societies were represented as follows:

DISTRICT.	DELEGATES.	POST-OFFICE.
Acton	E. M. Richardson.	Acton.
Eastern Indiana.	S. B. Brillhart	Kendallville.
Fairmount Union	Jno. Flannagan	Fairmount.
Fountain, Warren and Verm'n	O. Shelby	Covington.
Miami and Fulton.	J. A. McClung	Rochester.
New Carlisle	Samuel Bowman	South Bend.
North Salem	O. W. Lowry.	Jamestown.
North Eastern Indiana.	R. M. Lockhart	Waterloo.
N. Indiana and S. Michigan. .	Samuel Bowman	South Bend.
North Manchester.	B. F. Clemans	North Manchester.
Switzerland and Ohio	J. W. Jackson	Patriot.
Remington	O. B. McIntire	Remington.
Warren Tri County	Jonas Good	Warren.
Wayne, Henry and Randolph	B. B. Beeson	Dalton, Wayne Co.
Wells and Blackford	Jno. G. Wood	Montpelier.
Urmeyville	Jno. Tilson	Franklin.
Batesville.	Geo. Mitchell	Batesville.

The State Associations were represented as follows:

ASSOCIATIONS.	NAMES.	POST-OFFICE.
State Horticultural	C. M. Hobbs	Bridgeport.
Purdue University.	Prof. W. C Latta	Lafayette.
Shorthorn Breeders	Joshua Strange.	Arcana.
Wool Growers.	J. W. Robe	Greencastle.
State Florists	E. H. Hill	Richmond.

Immediately after roll call was concluded the President announced the following standing committees:

On Credentials—Messrs. Thomas Nelson, from the Board, and R. M. Mumford and Dr. Jonas Good, delegates.

On Finance—Hon. B. F. Clemans, from the Board, and Messrs. F. L. Snyder and W. W. Stevens, delegates.

Adjourned.

AFTERNOON SESSION.

The Board met with President Davidson in the chair, who immediately announced additional standing committees, as follows:

On Fair Grounds—Messrs. V. K. Officer and Lloyd Jones, from the Board, and S. B. Brillhart, Samuel Bowman and Marion Steele, delegates.

On Premium List—Messrs. Dick Jones and John M. Boggs, from the Board, and M. O'Donnell and J. Hoffman, delegates.

On Rules and Regulations—E. H. Peed, from the Board, and Messrs. J. S. Wright and Albert Henderson, delegates.

Hon. Jasper N. Davidson submitted his annual address, as follows:

PRESIDENT'S ADDRESS.

State and Delegate Board:

GENTLEMEN—Another year has passed, with clouds and sunshine; the bow of promise has again been fulfilled by seedtime and harvest. Mother Nature has been profuse in her treasured gifts to man. Wheat, corn and oats, with their millions of bulky bushels have begun their circuit from the bin, bringing sweet reward to patient toilers. Everything indicates the close of an agricultural campaign. Plans long since laid have been completed. "Lowing herds" and woolly flocks enjoy their deserved shelter which we provide. Pride, pleasure, and a certain "faith within us" keep active the work of zealous and careful breeding, though we are living in an era of low prices. History repeats itself in every vocation, and the farmer of age and experience has passed through many periods of depressed markets, the causes of which are many and varied. Extreme commercial activity characterizes the present decade. New and complicated conditions appear in connection with home industries. Legislation is rapid and experimental, involving official relations and general business. Too many applications to our courts are ended by the word "unconstitutional."

This is the age of trusts, combines and alliances; of lock-outs and strikes; of secret syndicates and conclaves; of centralized capital against the producer of raw materials and necessities of life; an age of rapid transit and swift manufacture; an age of adulteration of food, medicines and liquors. Shoddy clothing, cordage and upholstery, quack nostrums good for nothing, and all sorts of impractical patented devices are heralded by daily and weekly newspapers. The news which we hastily scan must be gleaned from chaff sandwiching every item, as inserted by the wary advertiser. To keep pace with what is truly a fast age, requires vigilance and extreme care on the part of the farmer. Methods common

to the days of stage coach and canal boat must be succeeded with those consistent with steam and telegraph. Enigmatical as depressions may seem, there must be a solution, which we, with concerted effort, should make.

The agriculturalist with his garnered tons and bushels looks on the present with serious solicitude. He is prone to see spooks in the shadows, and can not find the "sermons in stones." With grain "ripe unto harvest" he imagines a twine trust and spends time and money in organizing against its use. Hope is entertained that the enterprise begun in Wabash and adjoining counties to raise the fiber in sufficient quantities to invite local manufacture, will be successful. One possible remedy against imaginary and real trusts is to produce everything necessary for home consumption so far as climate will allow. It occurs to me that we pay annually in the State over half a million dollars for imported dried fruits, while the amount expended for green fruit would be startling in comparison even to this. The State Horticultural Society, which is doing much to advance this industry, will tell you this large outlay may be prevented by the increased cultivation of acclimated fruits. In order to meet many adverse conditions the farmer must diversify his crops. If wheat and corn are produced at a loss, raise less. If hogs and cattle are below zero, breed better and fewer. Horses are in steady demand, while sheep, from which two coupons a year may be clipped, are good property. Low prices in any commodity are followed by the cry of trusts and "corners."

Supply and demand are old terms but bear close watching. The absence of the former makes prices steady and good, while without its complement, demand, the opposite will prevail. Importers are sure of a market before investing capital. The farmer should be equally wary in regard to his productions.

National, State and county expositions of our material wealth are yearly growing in public favor. Our government proposes to celebrate in fitting style the four hundredth anniversary of America's discovery, and we recommend that this Board, through its representatives in both houses of congress, use all honorable means to secure the World's Fair at Chicago, or some eligible point near the center of population. Since leading features of the Exposition will be live stock and agricultural exhibits, we should "take time by the forelock" and see that Indiana makes a show commensurate with her prominence in these industries.

Concerning the last Fair, it is scarcely necessary to say that there was a conflict in dates between Indiana and Illinois. Yet notwithstanding this drawback, our exhibit was up to the standard except in the different classes of beef breeds, and we believe the prevailing low prices make breeders indifferent as to showing. This latter fact was apparent by small exhibits at local fairs. Your patience forbids a detailed account of the many excellent displays of every kind, but we must have the pleasure of saying that it was in every way a success. The absence of protests and complaints in all departments is creditable to the management, and careful execution of rules adopted after long experience.

The entire debt one year ago approximated \$57,500. The annual installment of \$10,000 appropriated by the State was paid, also \$4,000 from the earnings of the Board, reducing it to \$43,000. A sum sufficient to pay the interest and current expenses was left in the treasury, and possibly a few new buildings may be built from this fund. The average net earnings of the Board for the past five years

approximate \$5,000 per year. Reckoning from this basis, at the end of four years, with the appropriations for that period, the Board will be out of debt and have a good surplus in the treasury. This surplus should be used in the erection of modern barns suited to the accommodation of horse exhibits. The State florists ask for a building arranged for their displays, and we believe it should include space for the fruit exhibit. While on the subject of finance, allow me to recommend that no interest-bearing debts be made, and that strict economy be observed in all departments. Our pledges to the State should be sacred and faithfully kept, to the end that every dollar of the appropriation may be applied to the debt until paid. When this has been accomplished the Board may congratulate itself that not a single debt has been repudiated or a premium pro rated. The possibilities of the Board as an exponent of the educational system of the State will be assured and its intentions in part verified. It may be premature, yet we think when such time arrives the price of admission for the first two days of Fair might be lowered, and many more thus enabled to see the object lessons prepared for their benefit.

We also earnestly recommend that the exhibitors who have placed permanent buildings on the Fair Ground be protected in their rights and priority as to claims. Non-executed leases, neglect of renewals and new orders from the Board create a troublesome confusion and often are occasioned by haste of lessee. Much credit is due our General Superintendent, who has platted and numbered the entire plat, rendering exact locations easily made.

The free pass system in connection with the machine and implement departments has been abused. In making this assertion we cast no reflection on the great majority of our regular exhibitors. The system is manifestly wrong in principle. No exhibit can be made without a revenue from gate receipts, though it may be said this department takes no cash premiums from the Board. This is mainly true, but such exhibitions are made solely for advertising purposes. Premiums on live-stock defray the running expenses of lucky winners, while the majority pay stall rent, feed bills and helpers from their own pockets, besides the tribute at the gate. It now requires two members to supervise admission of machinery and implement men, while new men entitled to pass the gates are frequently delayed in the rush at entrance. After careful consideration it is advised that firms who fill buildings or operate heavy machinery shall receive a ticket good for two admissions each day and one for an assistant. Additional helpers on order of department superintendent should be allowed to purchase a ticket for one dollar, good for the week. This matter requires and should receive careful attention.

An act passed the last Legislature establishing the live-stock sanitary commission and delegating appointing power to the Board of Agriculture. In accordance with the law an extra session was called April 2, which resulted in the nomination of Adams Earl, of Tippecanoe; Samuel Bowman, of St. Joseph, and George W. Hall, of Rush County. The commission took the oath and organized, but owing to a defect in the bill the Auditor of State refused to pay the per diem and expenses incurred by members. It was thus rendered inoperative during the greater part of the year. Contagious diseases have prevailed to some extent, notably glanders in a few localities, to which human life has also been sacrificed.

Since the court has favorably interpreted the law, we feel assured it will be enforced for the best interests of the stock growers.

We are pleased to state that the institutes held under the recent acts of the Legislature have been successful. The interest seems to be general throughout the State, and it is a regrettable fact that the appropriation is good only for one year, through a defect in the bill. However, if proper interest is shown we feel satisfied the farmers, through their representatives in the next Legislature, can secure an amendment making the appropriation \$10,000 annually. This work is in direct connection with that of the Delegate Board, and we earnestly ask each member to use personal influence with his Representative to make such revision of the law as will best subserve the interests of the producing classes.

Let me call your attention to the State industrial associations which annually meet in these rooms. Each is an institute within itself. Rates can be secured on railroads and at hotels, and the information derived from any session will amply repay a visit to the capital.

A good street car system now gives the public easy access to the Fair Grounds, a fact for which we are truly thankful. The hackneyed cry of "waiting crowds" is a wail of the past.

Much credit is due our Secretary for his patient care in compiling the vast amount of information found in our annual report. Agricultural reports cease to be considered rubbish by even the most fanatical in Indiana. They may now be classed with the statistical literature of the day. We regret that its publication is necessarily delayed so late in the year. It seems to me that a special enactment of the Legislature, fixing the date of the Delegate Board meetings for November, would do much toward making an improvement. County and district fairs would still have ample time to make their reports, and the information could be given by the old officers of the respective associations. The matter would thus be in the hands of the Secretary two months earlier.

Primarily this meeting belongs to the Delegate Board. Its cares are yours and the duties important. Eight members are to be elected for two years' service. The success of the Board depends on willing workers.

The last two years have been seasons of activity, many changes wrought and permanent improvements made. Complications peculiar to all business have arisen and been overcome by experience and skill. With a technically crippled credit and depleted treasury we waded through the bog, but have at last reached a sure footing with the pinnacle of safety not far beyond. As factors of national progress, we now occupy no unenviable place and hope to reach a still higher plane.

My connection with the Board in an official capacity for the past two years has been pleasant. Success is the result of experience. If mistakes have been made they may serve to prevent others in time to come. Allow me to return cordial thanks to all for their kindness and co-operation, which trust will be extended in like manner to my successor.

At the conclusion of the reading, the address, in its entirety, was referred to a special committee consisting of Messrs. Clemans, Crim and Buck.

The Secretary submitted his annual report, as follows:

SECRETARY'S REPORT.

Gentlemen—I have the honor to submit herewith my annual report and financial exhibit of the business of the Indiana State Board of Agriculture for the year ending December 31, 1889:

Total receipts from all sources.	\$46,103 64
--	-------------

EXPENDITURES.

General cash orders.	\$28,914 73	
Premium orders	10,200 00	
		\$39,114 73
Balance in Treasury		6,988 91
Total		\$46,103 64

ITEMIZED RECEIPTS.

January 1, cash in Treasury.	\$264 69	
By note in bank	6,019 25	
By note to S. Johnson.	2,000 00	
From Women's Department.	30 00	
April State appropriation.	10,000 00	
April interest, rebate on note	64 00	
August, by note in bank	595 60	
		\$18,973 54
Sale 50c admission tickets.	\$18,484 65	
Sale 50c admission railroad coupons	562 00	
Sale 25c admission tickets.	1,041 25	
Sale 15c amphitheater tickets	1,198 50	
Sale exhibitors' tickets at \$1.	112 00	
Total from sale of tickets		21,398 40
Entry fees, speed		1,372 00
Rents	\$795 00	
Privileges, Women's Department.	146 00	
Privileges, State Fair.	2,367 50	
Stalls and pens.	1,051 20	
		4,359 70
Total receipts		\$46,103 64

BOARD OF AGRICULTURE.

GENERAL EXPENSES.

Members' per diem	\$1,914 94
Salaries	1,866 63
Advertising	700 67
Postage, etc	276 80
Incidentals	151 24
Janitor and tools, water rent	538 25
Insurance	465 25
Back claims	1,091 63
Bank and interest accounts	16,438 25
Total	<u>\$23,443 66</u>

CONSTRUCTION AND REPAIRS.

Labor.	\$613 04
Lumber	677 67
Piping, etc.	44 32
Roofing	5 00
Hardware	110 95
Whitewashing, paints, etc.	129 85
Repairs	327 83
Trees and planting	65 22
Total	<u>\$1,973 88</u>

CURRENT EXPENSES, STATE FAIR.

Gate-keepers.	\$201 93
Police.	781 97
Labor and sweepers.	62 00
Awarding committees.	379 00
Assistant superintendents	222 30
Straw and sawdust	321 75
Fuel and power.	44 95
Gas.	41 88
Tickets and ribbon	71 50
Music	250 00
Closets	3 75
Rebates	162 55
Drayage and incidentals	89 92
American Trotting Association.	29 00
Treasurer's assistants	189 75
Sprinkling.	31 50
	<u>\$2,883 75</u>
Woman's department	613 44
Total	<u>\$3,497 19</u>

ANNUAL MEETING.

77

PREMIUM AWARDS.

Cattle	\$1,320 00	
Horses	4,591 00	
Sheep	568 00	
Hogs	779 00	
Poultry	412 00	
Total live stock		\$7,668 00
Farm products.	\$479 00	
Horticulture.	729 00	
Geology and natural history.	43 00	
		1,251 00
Woman's department	\$1,151 50	
Children's department	129 50	
		1,281 00
Total		<u>\$10,200 00</u>

The total number of entries was 5,847—508 more than at any previous Indiana State Fair, not including articles in the Mechanical and Art Departments, on which no premiums were offered.

STATE FAIR, INCLUSIVE.

Receipts.

Admission tickets	\$21,398 40	
Entry fees.	1,372 00	
Rents and privileges	4,359 70	
		<u>\$27,130 10</u>

Expenses.

Members' per diem	\$1,914 94	
Salaries of officers	1,866 63	
Printing and advertising	700 67	
Postage, etc	276 80	
Express, telegrams, etc	151 24	
Current expenses State Fair	3,497 19	
Twenty per cent. improvement account. .	394 77	
Premium awards	10,200 00	
		\$19,002 24
Balance credited to State Fair. . .		8,127 86
Total		<u>\$27,130 10</u>

Insurance to the amount of \$465 and expenses of care taker during the year, and tools bought, are not included in the above.

INSURANCE.

On Main Building, rate $1\frac{1}{4}$	\$23,000 00
On Grand Stand, rate $1\frac{1}{2}$	8,000 00
On Stabling, rate $1\frac{1}{2}$	2,800 00
On Stock Pens, rate $1\frac{1}{2}$	1,000 00
On Dwelling House, rate 40 cents	600 00
Total against fire	<u>\$35,400 00</u>

Against Tornadoes.

On Grand Stand, rate 1 per cent. per year	\$2,000 00
On Main Hall, 1 per cent. for 3 years	1,000 00
Total against tornadoes	<u>\$3,000 00</u>

Under general expenses, in banking accounts, are included payment of notes in bank, on which the members of the Board were endorsers, for \$6,354, and individual notes to amount of \$3,100, which were made necessary by the building of the amphitheater and speed ring during the season of 1888 and the unfavorable outcome of the Fair that year. The liberal and timely appropriation by the Legislature of \$10,000 enabled us to cancel these obligations, and the good showing for the past season, together with the annual appropriation of \$10,000 for the next four years, will enable the Board to pay off the \$35,000 of the bonded debt, drawing 6 per cent., and the \$10,000 of purchase money, in five notes of \$2,000 each, drawing 5 per cent., in due course of time.

The advertising for the State Fair has been a marked success. Volunteer agents have been numerous to post our show cards, and the press of the State have cheerfully aided us in publishing our circulars and notices of the Fair.

There have been no protests or law suits to encumber the business of the Board for the past two years.

With acknowledgment of kind and courteous treatment from all associates, thereby tending to lightening the labors of the office, this is

Respectfully submitted,

ALEX. HERON,
Secretary.

The Treasurer submitted his annual report, as follows :

TREASURER'S REPORT.

Mr. President and Gentlemen :

I take pleasure in reporting to you, as Treasurer of the Indiana State Board of Agriculture, the receipts and expenditures for the year ending December 31, 1889, as follows :

RECEIPTS.

Cash on hand January 1, 1889.	\$264 69
Cash received from all sources	45,838 95
Total receipts	<u>\$46,103 64</u>

EXPENDITURES.

Paid on old premium orders.	\$76 00
Paid on general orders	29,466 51
Paid on premiums on sheep	566 00
Paid on premiums on farm products	476 00
Paid on premiums on geology	43 00
Paid on premiums on horses and speed	4,540 00
Paid on premiums on woman's department	1,153 00
Paid on premiums on poultry	411 00
Paid on premiums in children's department.	130 50
Paid on premiums on cattle.	1,320 00
Paid on premiums on hogs	779 00
Paid on premiums on horticulture.	730 00
Total	<u>\$39,691 01</u>
Balance on hand	<u>6,412 63</u>
Total receipts	\$46,103 64

Respectfully submitted,

SYLVESTER JOHNSON,
Treasurer.

The reports of the Secretary and Treasurer were referred to the Finance Committee.

General Superintendent Merrifield submitted his annual report as follows :

GENERAL SUPERINTENDENT'S REPORT.

To the President and Members of the Indiana State Board of Agriculture:

GENTLEMEN—As we meet upon this occasion we may well congratulate each other upon the success of the Fair of 1889, and upon the fact that no serious accident befel any one at that time. Probably no State Fair in the Union could show a better line of exhibits or a more satisfactory balance sheet than that of Indiana, and surely no Fair ever went off with more perfect smoothness and harmony. Among the improvements we find the following :

Two elegant exhibition buildings, erected respectively by J. F. Seiberling & Co., manufacturers of reapers and mowers, of Akron, Ohio, and Bucher, Gibbs &

Co., manufacturers of plows, of Canton, Ohio, and one neat and substantial exhibit building erected by B. Koehring & Son, hardware and implement dealers, of Indianapolis, Ind. A new ticket office was erected near the north end of the amphitheater, and a commodious feed and grain house was constructed out of old lumber and buildings already on the grounds.

About one acre of land was inclosed at the southwest corner of the grounds and about thirty-six cattle stalls were built thereon. Some grading and filling was done about the grounds and on the time track. The bridges required considerable repairing, also the roofing of horse stalls and partitions in the same. One hundred shade trees were set out, and seem to be doing well.

The much-needed eave-troughs to the Main Exposition building have been put on. A large amount of whitewashing was done, including the walls of the main building.

Horse racks were built at a very reasonable cost, which provided hitching places for nearly one thousand horses, and were much used and highly appreciated by our visitors from both city and country.

That part of the grounds formerly occupied by agricultural implements was found to be insufficient for the enormous exhibit of this year, and space on the west was set apart and well-filled by implement and fence exhibits.

Space under cover could not be given to the carriage manufacturers, sufficient to meet their wants, and one or two large manufacturers refused to exhibit on that account.

The horticultural exhibit was crowded, and the floral display would have been much more attractive if more room for it could have been allowed.

I beg leave to submit to your earnest consideration the following improvements:

1st. Building a power-hall, 300 by 40 feet, same to be located north of Walter A. Woods' building, and on a line with the east front of same. This, I think, can be easily rented at a given amount per front foot so as to be a profitable investment.

2d. Convert the present power halls into buildings for implement exhibits.

3d. Build a floral hall not less than 80 by 160 feet, locating the same somewhere near the north-west corner of the main building.

4th. Build barns of sufficient capacity to accommodate 150 horses; locating the same where the horse-racks now stand, removing said racks to the ground below the hill in the north-west corner of the grounds; providing for ample ventilation in said barns.

5th. Remove about one-half of the horse stalls now on the east side of the grounds, for the reasons that they are objectionable to residents opposite to them, and are now in such a dilapidated condition as to be almost unfit for use.

The bridges over the State Ditch will need careful inspection, and probably one or more of them will have to be rebuilt.

I recommend that a new bridge be built leading from the north end of Delaware street across the State Ditch to the drive in front of the main building. As this is the principal avenue for vehicles, it should have a good broad bridge.

I have rendered an itemized statement of receipts and expenditures, which will be placed on file in the office of the Secretary.

With many thanks to the individual members of the Board for their uniform kindness and courtesy to me, and with sincerest wishes for your future prosperity, I have the honor to be, yours very respectfully,

C. E. MERRIFIELD.

The General Superintendent's report was referred to the Committee on Fair Grounds.

The reports of the Department Superintendents in charge of the Fair were submitted, as follows:

MECHANICAL DEPARTMENT.

ROBT. MITCHELL AND B. F. CLEMANS, SUPERINTENDENTS.

As the Superintendents of this Department, we feel just pride in being able to report that the exhibits far exceeded any former exhibition. The number of entries was above 200, and in quality second to no former year. Through the efficient management of the Superintendent and those having in charge the allotment of space, there was but little if any complaint in that respect, and exhibitors were generally satisfied. Several fine exhibition buildings were erected by exhibitors during the past year that add greatly to the general appearance of the grounds.

The system of free passes in this Department is greatly abused, and we think requires some decided action by this Board to enable the Superintendents of this Department to prevent the present abuses; and to this end we would respectfully recommend that exhibitors' tickets be issued and sold to exhibitors for the week, and that no free passes be issued to any but actual mechanics and laborers necessary to operate the exhibits, the free passes to be issued by the Superintendent of the Department.

CATTLE—BEEF BREEDS.

THOMAS NELSON, SUPERINTENDENT.

The exhibit of cattle at the fair of 1889 in beef breeds was quite meagre, only two herds competing. These were Shorthorns of Indiana, representatives of the herds of Thomas Wilhoit, of Henry County, and J. G. Robbins and sons, Decatur

County, the breeders of Herefords, Aberdeen, Argus and Gallaways failing to put in an appearance. The cutting down of the herd premiums may have had something to do with the failure of breeders of Hereford and other beef breeds, except Shorthorns, to be with us at our late fair, as at previous fairs of our State for several years they have made good and creditable showings. I am inclined to think that various causes may be assigned for the small number of beef cattle on exhibition at our last fair, among which may be named, that of two of our most prominent breeders of Hereford cattle of our own State were not on the road last season, and having to compete in same class with Aberdeens, and run the risk of having an expert partial to Aberdeens as judge, drove our Gallaway breeders away from us, and especially the conflict between the fairs of Illinois and Indiana, occurring as they did, at the same date. These and other minor reasons made the exhibit in beef breeds of cattle at our last fair very much smaller than usual.

Yet we had a fine exhibit, competition was close in most of the rings, and the individual animals would compare favorably with any in their respective classes formerly shown at our fairs, as we had with us what proved to be the class and sweepstake winners at the great round-up at St. Louis. Therefore, having had the best of the beef breeds that were on the road last season, we should not be discouraged with our late exhibition, but look around and see if anything has been lacking in any way on the part of Board or Superintendent. Apply the remedy if one is needed, and a paucity in numbers of beef cattle at our fairs may not confront us again. The conflict of fairs between Illinois and Indiana that occurred last year will, through the intervention of wise councils, not probably occur again. And I trust that the Board will not overlook the fact that our premiums will have to be commensurate with those of our sister and adjoining States to fully insure a full show of beef cattle at our fairs. We can not afford to occupy a secondary position in this matter. I would most respectfully recommend that a separate class premium be offered on all beef breeds, not forgetting a class for Red Polls, heretofore unknown on our premium list.

The expert or one judge system again worked well. I would recommend that it hereafter be adopted for all classes, including sweepstakes.

In the dairy class for Shorthorns there was but one entry. The Shorthorn breeders of Indiana were derelict of duty in allowing an occurrence of this kind, and to the credit and shame of all other Shorthorn breeders of the State, be it said of that estimable lady, Mrs. Meredith, who is ever ready, nothing daunted, to hold up and keep to the breeze the Shorthorn banner, that to her alone is the Board indebted for the only exhibit in the dairy class for Shorthorns.

I could not conclude this report without alluding thus briefly to this matter, though it more properly belongs to the department of Mr. Seig, and I humbly ask his pardon for seeming to include in my report what of right belongs to him.

CATTLE—DAIRY BREEDS.

JOHN Q. A. SEIG, SUPERINTENDENT.

In this department the competition was very close, there being 81 entries in the Holsteins, 65 in the Jerseys, 45 in sweepstakes, being 187 entries in all, representing the very best herds of the country—it being the finest exhibit of dairy stock ever shown on the Fair ground. In the class opened for the Shorthorn dairy cow there was but one entry, showing that the Shorthorn breeders do not take as much interest in raising Shorthorns for the dairy as they should, or that they have no faith in their ability to compete with the regular dairy breeds. They should either make a show in this class or it should be discontinued, as it puts the Shorthorn cattle at a great disadvantage.

In the regular dairy breeds, whilst the competition was sharp and there was some feeling manifested by disappointed exhibitors, yet every one was bound to admit the honesty of the awards, the expert system having clearly shown its great superiority over the old committee method. The greatest feeling showed itself when the sweepstakes came in competition. It seemed to be almost impossible to get an impartial award in this class. The Holstein man is a Holstein man and the Jersey man a Jersey man, and if your referee is a beef man he invariably ties the ribbon on the most beef; hence, you see the trouble. I would, therefore, advise that these breeds be entirely separated and the sweepstakes be done away with and give the premium to the herds in their classes. I think this would give entire satisfaction to all exhibitors.

HORSE DEPARTMENT.

E. H. PEED, SUPERINTENDENT.

We had a very creditable display in this department, but not what it should have been. I am sorry to say that the exhibit in the draft breeds was not up to the past, but I think it can be accounted for in two ways; the first was the conflict in dates with the Illinois State Fair, the other is in the classification. There is no good reason why we can not have as good a show of horses as any other of the adjoining States. We tried, for the first time, a stall superintendent, and find that giving one man the entire control of stalls is a much better way than the old way of two or three men; that is, a general superintendent and a superintendent of departments. The allotting of stalls by the superintendent gets rid of all of the trouble of having exhibitors move after they have got in their stalls. We find that owing to the rapid growth of the Indiana State Fair the stalls are inadequate, and I would recommend the building of quite a number on the vacant ground north of the grand stand as soon as possible.

BOARD OF AGRICULTURE.

SWINE DEPARTMENT.

V. K. OFFICER, SUPERINTENDENT.

Notwithstanding the fact that a great swine show was being held in an adjoining State on the same date as ours, we had the largest and finest exhibition of swine ever held in the State, which means the greatest show in the world. After filling all the hog pens, we had to use about two hundred of the sheep pens. The quality of the exhibit was very fine. Old exhibitors frequently remarked that to win in the face of such competition was a greater honor than ever before. As in 1888, the Poland Chinas were the most numerous; in fact, they would have filled the entire hog pens.

The number of entries in each class was as follows: Poland Chinas, 209; Berkshires, 101; Chester Whites, 62; Suffolks and other small breeds, 38; sweepstakes, 132. We used the expert system of judging without the score card, and would recommend that it be continued, as it gave entire satisfaction to all concerned.

I would further recommend that classes be opened for each breed having established records in the United States.

Owing to the rapid growth which this Department has been making of recent years, I would recommend that the south half of sheep pens be fitted up for the use of the Swine Department.

Thanks are due exhibitors for their kind and courteous treatment throughout.

SHEEP DEPARTMENT.

S. W. DUNGAN, SUPERINTENDENT.

The sheep exhibit was hardly an average in numbers, but perhaps never excelled in quality at our State Fair. About 80 or 90 per cent. of the whole exhibit was imported and exhibited by the following enterprising firms, to wit: J. L. Thompson & Son, Arcana, Ind.; I. J. Williams & Son, Muncie, Ind.; J. B. Hearkless & Son, Knightstown, Ind.; Privett Bros., Greensburg Ind.; and the old reliable exhibitors, Cook and Morse, of West Mansfield, Ohio.

Our expert judge in this department (Mr. T. W. Samuels, of Bardstown, Ky.), who was selected in advance, and on whom we depended until the first day of our fair, was taken suddenly ill and could not come, so we had to depend on picked up committeemen. We were very fortunate, however, in securing the services of such men as Messrs. Cal. Darnell, J. R. Tomlinson and T. C. Phelps.

We would earnestly recommend to the Board, the propriety of appropriating more money to the Sheep Department, and changing the classification so that im-

ported and home-bred sheep will not compete together. The way it is now, it gives our home breeders very little, if any encouragement to show against these excessively fat and grandly developed imported show-sheep. It seems that these Scotch and English shepherds, somehow, understand the art of bringing their sheep up to a higher degree of development, at an earlier age, than we can, and it is useless for us to compete with them; our people have not been slow in learning this, and it accounts for our sheep exhibits, both at State and county fairs, being confined almost exclusively to imported (fitted-up) show-sheep, and while we would not throw a straw in the way of these *importers*, yet we *would* like to see our home breeders (of pure bred sheep) encouraged by giving them a ring to themselves at all our fairs.

AGRICULTURAL DEPARTMENT.

J. A. M'CLUNG, SUPERINTENDENT.

As superintendent of the Agricultural Department, I will say that it is very gratifying to be able to report a larger display than at any previous fair, except dairy products, which, from some cause, were not represented at all. The quality of the exhibits was fully up to the standard. The space allotted to this department was filled to overflowing long before the exhibits were all in, and in order to supply the demand for space, it was necessary to erect new tables to the extent of 114 feet in length, which were also filled beyond their capacity. The display would have shown to a better advantage if it had not been for the crowded condition of the exhibits, which was unavoidable on account of scarcity of space. The committee labored almost constantly for nearly three days before the work was completed, including an extra committee on bees and honey.

A general good feeling prevailed among the exhibitors, agreeing for the most part that the premiums, as a rule, went to the best articles.

Would recommend, in the revision of the premium list, that "Collection of Farm Products by any County or Local Society" be made more specific, or to conform with the requirements under the same head in the Horticultural Department, in order to prevent individual exhibitors from taking advantage of the same.

Would also call attention to the necessity of a more suitable hall in this department for the convenience of exhibitors, as well as visitors.

HORTICULTURAL DEPARTMENT.

R. M. LOCKHART, SUPERINTENDENT.

As Superintendent of the Horticultural and Floral Departments at the State Fair of 1889, I beg leave to make the following report:

Owing to the fact that the State Horticultural Society had decided to offer large premiums in addition to the list offered by the State Board, there was made the largest and best display of fruit that has ever been shown at any of our State Fairs. The fruit placed on exhibition came from many counties in this State, mostly from the south and extreme northern counties, but the central part of the State was also well represented. As the State Horticultural Society offered five times the amount in premiums offered by the State Board, nearly all of the county displays were entered in that department for competition, but, as both departments were arranged side by side, the combined display was grand indeed, and was greatly admired by all who visited it.

As an evidence of the grand exhibition made by our exhibitors, I wish to state that on Friday morning Hon. William H. Ragan (who is so well known in this State as a judge of fruits) visited our department and spent a full half-day with us. He had just returned from the International Fair, at Detroit, Mich., where he had been called to act as an expert judge in the award of premiums on the fruit on exhibition there. He said to us that he had awarded in premiums over \$1,400 on a display of fruits that would not equal one-half of the amount we had on exhibition, and, also, that the quality of our fruit was not excelled by anything that he saw there. We felt highly complimented by his statements, as it is a well-known fact that Michigan fruits rank among the best grown in the United States.

The combined displays covered over 2,000 plates—the different and distinct varieties of apples shown exceeding 100. In addition to the great display of apples, there was also shown as fine a collection of pears, grapes, etc., as can be found in any of our northern States. Many of the pears were as large and fine as any I have ever seen brought from the State of California, so justly celebrated for her fine fruits.

The floral display was located immediately north of and adjoining the display of fruits. Taking into consideration the limited space allotted to the florists, the display made by them was very fine, especially in cut flowers and floral designs. But it was not possible for them to make a display of plants that would do them justice. For many years the florists have been begging and pleading with the State Board to give them a sufficient amount of room to enable them to so arrange their department as to make it a leading feature of our State Fairs. The space allotted to them was not sufficient to allow a single florist to make a full display of his plants and flowers, and this space divided among three or four florists gave

each one so small a space that to make anything like a display they were compelled to so crowd their plants together that it completely spoiled the exhibition. There is another feature that I will speak of. The lack of space in the Floral Department has kept exhibitors away from our Fairs. If we could have given them the space to make their exhibit we could have had large exhibitors from many of the cities of the State, but we were not even able to give the Indianapolis florists sufficient space.

The location given to the Horticultural and Floral Departments, on the lower floor of the Exposition Building, is a very bad one, for the reason that the light is not sufficient, and for the additional reason that the dust and dirt from the upper floor so completely covers the fruits, plants and flowers that, by the closing day of a week's fair they are hardly fit to be seen, and the florists complain very much of this annoyance, and say that many of their finest plants and flowers are completely destroyed. I am well aware of the fact that up to this time the State Board of Agriculture was not in shape to give better facilities for exhibition in these departments, but the time has now come when something should be done for them. I know that the Board is contemplating the erection of a suitable building for the use of this department, and it can not be commenced too soon, as the removal of these departments from the main building will give additional space for the exhibition of carriages (which has been urgently demanded for years), to meet the wants of the largely increased number of carriage manufacturers.

GATES.

JNO. M. BOGGS, SUPERINTENDENT.

In making a report of this department I will say that, being assisted by a gentlemanly and efficient force, everything passed off smoothly and satisfactorily with the exception of the "booth and privilege tickets." We were greatly imposed on by them, and annoyed not a little. I would suggest they be abolished, and in lieu thereof have the party entitled to free admission of helpers have their names entered in a book for that purpose, and use the gate set apart for helpers in the mechanical department. I also recommend that in place of the ribbon badge for gate keepers they wear a police star. The total expense for assistance, including railroad fare, was \$155.45.

GRAND STAND

W. W. BERRY, SUPERINTENDENT.

At the last fair on Thursday the new structure was tested to its fullest capacity, while on Friday it was three-fourths filled. The expenses of the "Grand Stand" were very meagre when compared with the receipts. I would suggest that the superintendent be required to report each day the number of tickets sold.

I have no further suggestions to make in the improvement of the building, except an extension, and that certainly will have to be done soon if your fair continues to increase in the future as it has in the past.

A motion was carried directing the committee, consisting of J. W. Robe, Robert Mitchell and W. A. Banks, to wait upon the Governor immediately, and invite him to address the convention. The Governor made his appearance, escorted by the committee, and responded to the invitation.

GOVERNOR HOVEY'S REMARKS.

Mr. President and Gentlemen of the Convention:

I feel much gratified for the privilege of addressing you at this time, as to Agriculture, I know but little about it in detail. All I know is of a general character. Although I have not been trying to carry on a farm for twenty-five years, still before that I made no money. Agriculture, in its present condition, is of vast importance to the United States. That wholesale mode of cultivation of large farms, which has heretofore taken place throughout the State, will have to be abandoned before farmers of the country can make much money. It is a vast field, now almost unknown to the farmers of this State, between here and the Pacific ocean, before many years transpire will be cultivated, and all the cereals cultivated in Indiana may be raised from the Atlantic to the Pacific. Over these arid plains of a thousand miles almost, it will not be thirty years, possibly not twenty, until all the grain raised in Indiana will be raised on those arid plains. While coming home from Peru, in 1870, I crossed these plains, and saw what they were. While in that country I learned that irrigation is of the greatest importance, and by this system all that land may be cultivated, and it will be as prolific as Indiana. Away back in the past ages, there was built an aqueduct in Peru 360 miles long, to bring water down from the mountains, which irrigated the desolate plains, and raised large quantities of grain. Now Congress has at this time appointed a committee on irrigation. Suppose that all this water that has fallen now could be housed and put in a reservoir where it could be drained over that country in the summer; it would make that whole body of land blossom in the summer. You old farmers know more than I do, but I will say that whole tracts of land there can be cultivated cheaper than you can clear away the forest and stumps of Indiana, and cultivate your land here. You dam up a mountain gorge, you soon have a vast lake of water. If you have a river, you have lots of water, or a little swale; you can soon accumulate a large quantity, and by utilizing this by way of drainage, you can cultivate hundreds of acres that are at present barren. You must look to it. Your big fields, with thousands of acres, will drive you to cultivate your land as in the East. There was a time when forty acres was considered a big lot of land. Near our large cities forty acres will give employment to a large number of hands. Near Chicago, it will employ near a hundred. I throw out these suggestions without much thought. I wish you to cultivate your land in such a way as to advance the wealth of your great State. We are now fifth

in the catalogue of great States of our Union, and going forward as fast as electricity itself. I hope you will have great prosperity in the future, in the great work of agriculture, that is occupying your attention. I thank you, gentlemen, for your attention.

Dr. M. E. Knowles, State Veterinarian, Terre Haute, discussed

CONTAGIOUS ANIMAL DISEASES.

Question. What per cent. of horses will take the glanders?

Dr. Knowles. About 28 per cent. get glanders. We have no reliable statistics in the United States, but I will give you an example. Two years ago I destroyed a horse for glanders in Terre Haute, it had been in the stable two weeks and up to the present day no others have been in the stable. We fed and watered in a box where no others had access to. This horse got his infection from Carlisle in Sullivan County. I would like to state here that in a neighborhood where they have glanders if some man is unfortunate and becomes affected and dies with the glanders the Commissioners would have no trouble with the glanders afterwards.

Dick Jones. Can a horse catch this disease from the fever?

Dr. Knowles. From the breath. I wish to impress on the minds of the members of this society the fact of the uncertainty regarding the diagnosis of the glanders. I have a letter in my pocket from a man in Henry County who had a horse affected with the glanders; this horse came from Muncie and had a discharge from the nose; he treated him and inoculated him. This was no test, for inoculation fails time after time. I wish to call your attention to consumption or tuberculosis. In regard to consumption in cattle I will say that it certainly is a contagious and infectious disease. A man can be affected with tuberculosis from milk. A number of instances are on record where babies have taken tuberculosis or consumption by this means. I know of two cases of this kind in infants, there was no tuberculosis history on either the father or mother's side; those two infants obtained their milk supply from two different cows and the children both died. Now two years ago some fifty cows were destroyed with this tuberculosis. A large per

cent. of the dairy cattle were affected with tuberculosis; talk about stamping it out of Massachusetts, they said it would take all the revenue to pay the expense in that State. Those people in the East have investigated quite fully this matter and have been more successful than some others. In the matter of infants drinking milk from such cows where there is any doubts, it would be safest to boil the milk, but don't eat the meat. Aside from that, sometimes cattle have lumpy jaw; the meat of such should not be eaten. The Illinois Live Stock Commission have been, I understand, killing lumpy jaw cattle for many years, but have done nothing with tuberculosis. There is another thing I wish to speak of, that is rabies, from which there has been more or less trouble. There should be a heavy license placed on dogs, for they are poor property, and if the license was sufficiently heavy it would materially decrease the number of worthless dogs. You take, for example, a man who has been bitten; he supposes the dog was mad and that he will have the rabies; not unfrequently this mental excitement will bring it about. Aside from that, over in the western part of the State we have had a number of cases of rabies, some in cattle and some in hogs. Another thing, there should be quarantine regulations for dogs. When a dog has bitten any one, it should be placed in quarantine until the man's mind, who was bitten, is eased.

Question. Do horses ever have consumption?

Dr. Knowles. Yes, but rarely. Most reliable investigators have discovered only seven cases.

J. W. Robe. Is this similar to glanders?

Dr. Knowles. The tuberculosis deposit and glanders are similar, but not exactly alike.

Mr. Mitchell. Is this big or lumpy jaw a hereditary disease to calves?

Dr. Knowles. Yes, I think it is; it affects the whole organization.

Question. What is the condition of the bone in big jaw?

Dr. Knowles. The bone appears to be honey-combed throughout with a kind of fungoid. This lumpy space is filled up with fibrous growth, and frequently forms suppuration.

Mr. Strange. It is formed on the side of the jaw?

Dr. Knowles. All through the bone.

Mr. Strange. I saw a cow for market once that had a lump under the jaw as big as a hat.

Dr. Knowles. Frequent experiments have shown large deposits on the parotoid gland of tuberculosis.

Question. Is there any cure for it?

Dr. Knowles. Yes, if confined to the cheek, or on the tongue, by using carbolic acid and iodine, you can also apply potash two or three times a day.

Mr. Strange. Is this contagious?

Dr. Knowles. It is contagious by coming in contact through abrasures in the mouth, perhaps made by corn stalks. When eating in the trough it gets a fungus in its mouth.

Question. Do cattle have the black leg?

Dr. Knowles. Yes, sir. It is curable, but not in all cases. If you have them on low land, move them to high pasture, which will be highly beneficial.

Mr. Boggs. Does not this come from high feeding?

Dr. Knowles. No, I think not: it is by change of pasture, most generally.

Question. Can it occur in the winter on dry feed?

Dr. Knowles. It frequently does.

Question. What is the difference between contagion and infection?

Dr. Knowles. It is usually termed the same thing. Infection is through means of the air, and contagion is coming in contact with the thing itself.

Mr. Strange. What about scab in sheep?

Dr. Knowles. Almost every farmer knows about that. You have your clips from which you have obtained results.

Question. What about hog cholera?

Dr. Knowles. I would try inoculation. I believe this is a remedy that is going to drive this disease out.

Mr. Mitchell. A discussion came upon this question before the National Veterinary Association, at Chicago, at which Dr. Billings did not seem to press that question very much, and

seemed to be afraid to press his inoculation cure on the profession.

Mr. Wright. Has there been any difference in this disease in the last few years? Is it the same now as some years ago?

Dr. Knowles. I think it is about the same.

Mr. Wright. Our experience is that it is different.

Dr. Knowles. Dr. Selman has two diseases, the hog cholera and swine plague, while Dr. Billings has but one. I have reason to observe that Billings is certainly correct in it. His offer is fair to the agriculturists of the State in allowing the use of an inoculated hog to test.

Question. How does this inoculation take effect?

Dr. Knowles. The only way to prove is by testing—by inoculating and placing healthy animals with hogs affected with the disease, and see whether this inoculation is going to fill the bill.

Question. Where can you get this?

Dr. Knowles. You can get it of Dr. Billings, of Chicago.

Dr. Heinbaugh, of Purdue University, was invited to address the convention on the above subject, and said:

MR. PRESIDENT—I am sorry that I came in after the reading of the paper began. I understood it was to be at 4:30 o'clock. The subject is one which we will have to go over again more or less. I did not hear Dr. Knowles say anything in regard to the glanders, whether it was a highly contagious disease or not. The glanders is contagious, but it is not infectious. I make a distinction between contagion and infection. A contagious disease is one where actual contact is necessary in order to transmit the disease. Infectious disease is one where actual contact is not necessary, but where there is an immediate bearer. Disease may be both contagious and infectious; if the disease be contracted by a contacting touch and an immediate bearer it is contagious and infectious. If I say infectious it may pass through an immediate bearer. If I say contagious it can only be transmitted by coming in contact with the affected animals. The glanders is an infectious disease, and not transmitted through an immediate bearer. The pus from glandered horses may come in actual contact and give it to others; it gets in the system. In that case contact would be actual, because you have transferred the virus, and the other, if it pass through the air and got to the horse, you would not expect it to be transmitted. I have not read of any case in which the disease has been transmitted as infectious; it is in all cases where the disease has been traced to actual contact. It is impossible sometimes to trace the glanders to the original horse, from the fact that horses change owners; and another thing is, it is utterly impossible sometimes to tell where the horse has been. That is one

reason for the great skepticism in regard to this disease. I have often been asked the question, "Where did this horse get the glanders? It has had no chance of contact." We have to allow considerable in statements of this kind, because no man knows just what horse his own animal may have come in contact with. Distemper is an infectious disease and is also considered contagious, and can be transmitted directly or indirectly. I know of an instance where horses had not been off the farm, even not out of the stable, for several months, where the distemper was prevalent. These horses have been affected. In most cases they don't come in contact, and in this case it was carried by some intermediate bearer. Any kind of isolation can not prevent it altogether, but will prevent many, perhaps 95 per cent., by proper isolation, but not all. In the majority of instances, however, isolation is the only thing to resort to in order to prevent disease. Isolation is a great factor in protecting against contagious diseases. Hog cholera is another disease in which isolation has nothing to do with it. Animals reared on the same farm where hog cholera was never known have been affected and the whole herd die in twenty-four hours. On our farm we lost twenty-six hogs in twenty-four hours, they had no chance to get with others. There was, however, a practical cause for that, for they had access to a stream of water which came from a lake some five miles above. A number of hogs died at the foot of this lake, from where this stream emerged. The whole vicinity was affected. Isolation is a great factor, as I said before, to prevent contagious diseases, but does not have the same influence to prevent infectious diseases. There are other diseases which animals are subject to, as tuberculosis, or consumption. I have seen several cases within six months which had tuberculosis, which is hard to diagnose. An animal may appear healthy and have this form of disease, the same as consumption in man. So in the management of tuberculosis it will baffle the skill of the veterinary surgeon for many years to come. It requires much skill if you wish to stamp it out. In doing so you stamp out many good animals. Inoculation with tuberculosis does not work as in glanders. When I have inoculated with glanders I always produce the disease. If I wish to determine the glanders I inoculate the animal that is well, and never yet have failed to produce the disease in some form. So I consider it a sure test which fails in a very few instances, indeed. When I have had doubt about glanders existing I collect virus and inoculate. I can remember several cases of glanders, of which the first impulse was to destroy. They did not show any positive symptoms of glanders. I inoculated these animals with negative results, and discharged the animals from quarantine.

So I think in the diagnosis where any doubt exists the best method is in inoculation. About rabies I do not care to say anything more than what the Doctor has already said; but I believe the biggest half die through excitement and not from the bite. The person is scared to death. Dogs are not the most desirable property unless they remain where they properly belong. As regards this lumpy jaw, it probably is in most cases a vegetable fungus which can be contracted from the fungus off of certain plants; it is not a highly contagious disease, because all of you know you may have one lumpy jaw animal in your herd and the rest not be affected. I doubt whether you can call to mind ten cows on the same farm at the same time affected with this disease, in your life time. It is a disease that

may be transmitted to the bovine tribe and there should be a law against using such animals for meat. There is another disease known as "lockjaw." I came across a physician from Louisville some three weeks ago who told me something of interest regarding this disease. Lockjaw was for a long time considered a germ. This doctor found this germ and by its application has not failed to produce lockjaw in animals. The virus he procured was leaf-mould out of the woods. Lockjaw usually follows pricks or punctures about or below the knee. If the theory is correct, there is some reason, from the fact that animals come in contact with the mould in that region more than any other, so the hock below the knee would be coming in contact, and an animal susceptible of the disease would be affected sooner or later. Now we know that some people exposed to measles, mumps or whooping-cough will contract those diseases, while others will not be affected; such facts are true with horses. If a horse has the glanders it is no sign that the one with him must have it, but we should separate them for fear the injection of the virus into the blood would produce the disease. The positive fact that glanders exists is no proof that the other will take it, because he may escape. We should isolate and disinfect and await results; it is not expensive. I worked in a stable once where there were 1,800 horses and 23 had the glanders. The veterinary who had charge of the barn said it was not a rule that the one next to the glandered horse would take the disease, so I do not think it is worth while to kill the stable companion of the horse.

J. N. Davidson. What are the symptoms of black leg?

Dr. Heinbaugh. That is a disease on which I am not posted.

Question. How long would you isolate horses in case of glanders?

Dr. Heinbaugh. I would isolate for eight weeks.

R. M. Lockhart. Recently 109 head of cattle were said to have been sent to Chicago, that had lumpy jaw. That this disease does exist to an alarming extent is sufficient reason that gentlemen in this State should look into this matter.

Dr. Heinbaugh. I never had more than two cases on the farm at one time in my life.

Dr. Stockbridge, Purdue University. Allusion has been made to the Massachusetts Sanitary Commission. I was brought up or grown up under that Commission, and have known something of the scientific experiments of the Commission. So far as the statement of these cases of glanders in the Boston street-car stables before 1878, it was not more recent than 1885 to 1887. It is a well accepted belief that inoculation is a positive proof against glanders. The Massachusetts veterinarians found

a company controlling 6,000 horses. Three hundred and seventy-one horses were declared to be positively dangerous, and ordered to be killed; but the street car company, backed by the Commissioners, thought that "doctors disagree." Therefore two of the best veterinarians in America should decide the question. One of the two veterinarians selected was at the head of the American College in New York, and the other of Philadelphia University. These two men came to Boston and examined all these three hundred and seventy-one horses and accepted a written report on each individual case of three hundred and seventy-one horses. The opinion of these two men differed materially. One said at least forty of these horses were positive glanders, dangerous, and must be killed. The other said to the members of the Commission, "Will you gentlemen accept inoculation as positive proof?" They said, "Yes, make it." These forty horses on which inoculation was made, after a period of three months of isolation, not one case of glanders resulted fatally, and at the end of that time they were turned loose. Three years ago the positive assertion of the Commission, printed in the last report of the State Board of Agriculture of Massachusetts, that not one case had occurred in the stable since. Therefore, I say among veterinarians this case is cited as proof that inoculation is accepted as positive proof of existence of glanders. Therefore, I say this to you as farmers, it is of the greatest importance. The probabilities are that inoculation is proof of glanders. Therefore, that being the case, any man coming on the farm to kill the animal, you have a right, before having them slaughtered, to demand this inoculation. If inoculation fails, the glanders was not present; but if it takes, it was present. But before it was established you have a right to resort to this.

Dr. Knowles. The case I referred to occurred in 1887.

At the conclusion of this discussion nominations to fill vacancies occurring on the Board were called for, and the following names were presented:

1st District—ROBERT MITCHELL, of Gibson County.

2d District—W. W. BERRY, of Knox County.

3d District—J. Q. A. SIEG, of Harrison County.

4th District—W. B. SEWARD and A. E. JOHNSON, of Monroe, and THOMAS J. MANN, Sullivan County.

8th District—S. W. DUNGAN, Johnson, and T. M. RICHARDSON, of Marion County.

14th District—J. A. McCLUNG, of Fulton, and L. B. CUSTER, of Cass County.

15th District—W. A. BANKS, of Laporte County.

16th District—R. M. LOCKHART, Dekalb County.

Board adjourned.

JANUARY 8, 10 A. M.

The Board met, with President Davidson in the chair.

The Committee on Finance reported the books of the Secretary and Treasurer correct.

The Special Committee on President's Address reported, recommending an approval of all the suggestions contained therein, which was concurred in.

The Committee on Premium List reported, recommending that the classification and premiums in the cattle department remain as last year. In sweepstakes on cattle, that the one judge system be adopted, and that for beef breeds a practical butcher, and for dairy breeds a practical dairyman be selected as judge. In the horse, sheep and hog departments, that the premiums remain the same. In the speed department, that the purses be increased at least one-half above last year.

DISCUSSION.

Mr. Strange. I wish to suggest that the Exhibition Committee of the National Herd Book of Shorthorns, giving premiums for dairy purposes, that the report be framed and made for test of Shorthorn cattle instead of record. We want test in place of record. Record might be disputed but test would not.

Mr. Mitchell. Any Board exhibiting would have to exhibit on that condition.

Dick Jones, Columbus. In order to carry out this recommendation we have to change our rule, which is an expert judge in all classes but in sweepstakes. For herds we have the three-judge system. In this report we recommend in herds that the one-man system be adopted. A butcher for the beef grades, and a dairyman for the dairy breeds. The beef breeds come together, the Shorthorn, Poll Angus and Herefords. If we select a Shorthorn man, a Hereford man and a Poll man, invariably the Shorthorn man will vote for his and the Poll and Hereford men for theirs. We think this can be made more satisfactory with a butcher for the beef breeds and a dairyman for the dairy breeds.

S. W. Dungan. We do not understand, I presume, that this expert judge is to go through the class and then serve on the Sweepstakes Committee. It seems to me the matter will be partly decided when the classes are gone through with, which will necessitate the selection of two expert judges for each department.

Mr. Mitchell. These gentlemen have raised a question of vast importance. I look upon the butcher as being the worst of judges as to exhibition class, for this reason, the butcher looks at the animal from a butcher's and not from a breeder's and feeder's standpoint. Now of the three most prominent judges at Chicago, one was a breeder, another a feeder, and the third a butcher. Their decision was to the breeders' and feeders' interest and against the butcher.

Dick Jones. Would you include a herd of beef cattle?

Mr. Mitchell. There are two objects we show for, beef capabilities in beef breeds.

Dick Jones. What shall we aim to show in classes for breeders or beef?

J. Q. A. Sieg. It is material; a Holstein as a breeder is different from the Jersey, which is for butter, while the Holstein is for milk, consequently there is greater difficulty coming up in the Jersey breed and Holstein; for the one, the idea is for butter alone, yet they are both dairy breeds. Here they are

shown differently in the breeder's identical breed for the beef. There is nothing but herd and dairyship given in the sweepstakes; they should show in the class, and no sweepstake in the dairy class; they should show one for butter and one for milk.

At this point in the discussion a motion was carried directing the superintendents of the several departments to read their reports.

The recommendations contained in the reports of Cattle Superintendents Nelson and Sieg were adopted after the following discussion :

Mr. Mitchell. Mr. Sieg sets forth the theory that we should set aside sweepstakes. We are advancing the idea of doing away with sweepstakes. We should have an expression on this point at this time. We added sweepstake premium to the class, and now they want to do away with sweepstakes.

Mr. Boggs. In connection with our report on premiums, as to lettering our list made Mr. Sieg's suggestion fresh in our minds. We did not cut out sweepstakes, as he thought. Now would be a good time to take action in the matter.

Mr. Mitchell. I move that we concur in that report, whether we abolish sweepstakes or not.

Pending its adoption the following discussion ensued :

Dick Jones. Mr. Mitchell says that is to abolish sweepstakes and do away with the herd premiums. We simply add a herd class.

J. Strange. The sweepstakes premiums should be disposed of and put in the classes. To put Holstein and Jersey together there is no way to decide where the premium should go. If there is a dairy test it should be so decided. I want to have a sweepstake premium, but local in the class. The idea of bringing out a young animal to compete with a mature one, in my judgment, is not advisable. By sweepstakes we bring the best to the front, irrespective of age.

Mr. Mitchell. I am in favor of the report, and we should do away with sweepstakes in regard to various breeds coming together. If the Hereford wins he is jubilant over the others,

and *vice versa*. Take the money going to sweepstakes and let it go to the class. Many of the men here want this question settled, and we should have an expression from the Board on this subject.

Dick Jones. I differ with Mr. Mitchell. We go to work in the catalogue and give a list of Shorthorn, Hereford and Polls, all three now acknowledged beef breeds. Now, we have not tested the beef breeds; we have not said which is the best of those three. Now let all go for sweepstakes and see which is best. Another thing, you take every exhibitor in this room and ask him which premium he prizes highest, and he will say sweepstakes. We certainly make a mistake by wiping out sweepstakes. I am in favor of breeds going together in the sweepstakes show.

Mr. Mitchell. My experience leads me to believe that we can not get a committee that is not biased. Our prejudices are such that we can not get a committee to suit us. The butchers (I saw that tested at the fat stock show), will not give satisfaction; they judge from a butcher's standpoint.

W. W. Stevens. We have found it expedient to do away with our sweepstake premiums in Washington County and award to the class which has given good satisfaction. This sweepstakes does not decide anything.

The report of the Committee on Premium List was concurred in.

The Committee on Rules and Regulations reported several minor amendments, which were referred to the State Board of Agriculture for its action, as were also all the recommendations contained in the reports of Department Superintendents.

REPORT OF COMMITTEE ON FARMERS' INSTITUTES.

R. M. Lockhart. I have no written report to offer, and what report I shall make will be in a verbal way. The committee was requested at our last meeting in January, 1889, to conduct the work during the winter of last year. I say, as far as I am concerned, the institute work through the State where



I was called was as grand a work as any thing I ever had any thing to do with. Since two years ago I have been associated with others in holding seventeen Institutes. I made a report last year; you know what it was. Since our last report I have met with Institutes in our section of the State at Richmond, Muncie, Laporte and Warsaw. The people attending those Institutes bear me out that no Institutes held in this country did more good among the people than those Institutes. Our Legislature has passed an appropriation for the carrying on of Institutes. Purdue University has taken the matter up, and under Professor Latta several Institutes have been held. In the northern part of the State the weather was bad and some drawbacks in the work, but it will be taken up between this and the first of April, and some good Institutes held. In regard to the work, I find in some sections of the State it is difficult to get all the benefit, but where Institutes have been held in my section the trouble is in arranging them. They want more than we can give. The number must be limited. When they are held in our part of the State they are a success. As Professors Smart and Latta are on the committee, they, perhaps, will address you on the subject.

Prof. J. H. Smart, Purdue University. I would be glad indeed if Mr. Lockhart would report the number of Institutes, and where held, for publication. I want to agree with him that the Institutes were a success and so far as I was concerned and for what I have done, I have received my compensation; but the other members of the committee received no compensation, so I think a great deal of credit is due Mr. Lockhart and Mr. Conner, who gave me much information and went out and did work in the field, while I did not do so much. I give the whole of the credit to them.

J. B. Conner. I do not desire to occupy five minutes of time but wish to call the attention of the Board to the fact when this matter of Institutes was presented two years ago it was in the minds of the members that the Legislature would do nothing to bear expenses. I said at that time, as some remember, that if the farmers of the State manifested an interest in this

institute work, it would have an impression on the Legislature and an appropriation would follow. An interest was manifested in this public work, and so we have an outcome in the appropriation of \$5,000 for one year, showing there is that public appreciation of the work in that act. I think that all we need is to go forward and make demands that are due these institutes, in the shape of a larger appropriation. I have attended two or three which cost double the amount allotted to them from this appropriation because it had to be divided. The appropriation is too small for the work and the large interest manifested. I move to recommend to the Legislature an appropriation of \$10,000 for the work. And I will say, before taking my seat, that some States appropriate larger sums and carry on successfully in each county. It is important that an appropriation of \$10,000 be made.

Mr. Mitchell. I am of the opinion that this resolution should not be adopted. This Board has been hampered for money to help us along. We have an appropriation of \$5,000 now, and then you want them to come to us with \$10,000. If we ask the Legislature again they would think we were asking too much. At each institute they should take up a little collection to help defray the expense. At every institute I have attended that resolution has been adopted. It is bad policy for this Board to ask for it.

J. B. Conner, Indianapolis. The weakness of this Board and of agriculture in general seems detrimental to this work. They have not had the courage of their convictions. Mr. Mitchell has been an obstruction to this work. When there was an appropriation of \$5,000 made he was against it. It is a mistake in the way he looks at it. This body is a representative body and represents every district. The weakness of agriculture always is in a lack of conviction and not in appropriating. This thing has been before the Legislature, and we got a small appropriation, but it was in the face of timidity that we got it. We got an appropriation for institute work, but it is not large enough to carry on the work as it should be carried on. It is proper that the representatives of every so-

ciety in the State should be heard on this subject through this delegate Board.

Mr. Mitchell. I want to have things set right in this matter, I am opposed to this appropriation naturally. I don't know who brought that bill in, and never have given an expression on it. That thing never was up, and two-thirds of the Legislature can not tell you who brought in that bill. I don't want to be put in a false light. I shall speak my sentiments if it takes my head off.

Mr. Clark. The bill for the appropriation was urged by Mr. Robbins, residing at Rochester. A number of us asked the Board at the January meeting not to pass that resolution, but it passed, and after that we promised we would do all we could to get the appropriation of \$50,000 to relieve the State Board, but individually I was opposed to an appropriation of \$5,000 for Farmers' Institutes.

Prof. W. C. Latta, Purdue University. Seventeen Institutes have been held in the State, and twenty-six more have been arranged for, making forty-three in all that are booked for this present season, but we shall get fully half-way along, holding forty-five or forty-six Institutes before the first of April. This is all we have been intending to do. It was first thought we would be able to hold the entire ninety-two during the present season, but it is impossible to do so, and, after discussing with those in high authority, it was decided to hold about one-half this year, and next year the other half. The interest has been good, and, everywhere I have been, successful Institutes have been held. As was said a few moments ago, without a single exception that resolution endorsing the appropriation of the last Legislature was passed. They have asked with a unit that the appropriation be made annually, and in many cases they have asked that it be increased. Asking my advice on this, I do not know that I am prepared to speak; it is early in the season to talk about just how much we need; perhaps it would be better to let it remain awhile until we have gone farther in the work and found the sentiment of the people. I think I should say also, owing to the plan of holding Institutes this

year, that it will involve an expenditure on the part of the University of from \$1,500 to \$2,000. There will be no reference to the general management of the work the coming season. The University will have the expenses of the real management of the work next season unless helped by the Legislature.

President Smart, Purdue University. The thing never could be done in a satisfactory way under the discouraging sentiment if the University had not been backed up by this Board. They have done much for the success of this work. The members of this Board have put in much time, and it has been a work of love between us, and I feel that much good is being done.

Professor Latta. I am in a position to testify as to the statement just made. The Board has been cordial and on the part of those leading, and active in correspondence, and in that way helped in arranging for the work. It is through the University and the aid and generosity of the Board that the work has succeeded.

The motion of J. B. Conner that the Delegate Board ask the Legislature for an annual appropriation of \$10,000, to be expended in conducting Farmers' Institutes in the State, was carried.

Mr. Tilson's motion that a committee of three, consisting of one member of the Board and two of the Delegate Board, be appointed by the President to examine into the workings of the Woman's Department of the Fair in its relation to the State Board of Agriculture, carried, and the President appointed Hon. B. F. Clemans on the part of the Board and Messrs. M. O'Donnell, of Knox, and W. W. Stevens, of Wash-ton, on the part of the delegates.

The farming and manufacturing interests of Indiana were reviewed in an exhaustive and practical manner by Hon. W. B. Seward, and his views presented in an able paper, which will be found elsewhere in this report under the head of essays.

IS A SPEED PROGRAMME ESSENTIAL TO FAIRS?

DISCUSSION.

Dick Jones. Gentlemen, I will say that when the question comes up as to the advisability of a speed ring every man in this room will say there is no fair in the United States that can live more than three years without a speed ring. This question don't admit of debate. We find there are two classes of people who go to the fair. One goes to be instructed and the other goes to be entertained, and I think about 75 per cent. go to be entertained, where 25 per cent. go to be instructed. Now, is there anything we know of that will entertain a crowd of people better than a speed ring? Certainly not. I have had charge of the speed ring at our fair for the last three years. People follow me from morning till night. They don't say, "What races have you had to-day?" but, "When is the best horses on the list going to run?" It is the attraction of the week. How are we going to make this a success? In the first place, we want a good grand stand, and the next thing a good track. I say to you to-day if we have a purse sufficient to bring out the best horses (and they will come if we hang out the money) the fair is a success. We can get good horses on a half-mile track. I have taken pains this season to talk with eminent men, and they say that the best horses will go to the half-mile track. Ninety per cent. of these horses are educated on the half-mile track. It is explained in this way. A girl who commences music on the piano, and leaves it and goes to the organ, will never go back to the piano, but if educated on the piano, will go back to the organ. So the horse trained on the mile track is ready to go back to the half-mile track.

E. H. Peed. My experience has been very similar to that of Mr. Jones, and I can not get up an argument. I would like to hear from other delegates.

F. L. Snyder, Crawfordsville. If each person here would think for a moment that if attending a county or any other fair, no matter how many people you find there, when the bell

rings you will see where the people go. They will go to the races every time. I am like Mr. Jones; we can not have a good fair without races.

Mr. Beeson. The gentleman says that the exhibit is left when the speed comes on. I am not opposed to the speed ring, but I think it should be separate from the exhibit. Some claim that people will not attend without having a speed ring; the people when informed will. While the farmers are running after fast horses, I will venture to say there are tracks all over the State where the boys are training fast horses, getting not more than one in five hundred that is worth anything, but, if trained for driving horses, they will get a good investment. I fear we are encouraging a feature in society that is worthless.

Albert Henderson, of Lafayette. I was born in Indiana, seventy-five years ago, and have been, connected with fairs since their first rise. It will not do for us to be men of one idea, educating men in county fairs, on one line only. The speed ring is a necessary evil to some extent. The fairs are for educational purposes, to educate the farmers in various things pertaining to the farm, and too much stress should not be put on the speed ring to the detriment of other departments of the fair. To put our entire strength and energy to the cultivation of that, will bring us down to the comparison of those prigs, the gentleman spoke of awhile ago, in Alabama. We hear men say it will not do to rear cattle at all this season; that all the money you pay out for cattle is lost, but put this money in the horse and it will bring the people, but is this right? Are we to educate the heels of our horses at the expense of the boy's head? We have in our county a fair for the education of the boy's head and not the horse's heels. We pay a premium for the best schools, we invite men to talk to us fifteen or twenty minutes, and by this means we educate the brain and develop Indiana.

Judge Elliott. When we look at the premium list and at the report of the Secretary in relation to the speed ring and discover that the horses received \$4,500 premiums last year, while not more than \$400 to \$800 were paid on any other kind

of stock, the premium list is strong enough if not too strong in favor of the horse. If the great body of this \$4,500 was paid on horses that were of some utility and some value it would be different from what it is, but when a large per cent. is paid to the speed ring and given to the fast horse that is of no utility to the country, the idea strikes me that this catering has gone far enough, and too far. The custom throughout Indiana among the county fairs is to have a speed ring, and you get a few gentlemen who own fast horses in the State to form that ring, and they go from one fair to another, making a circuit, enter the rings and take away all the premiums on the horse list. It is simply a combination and jockey system to get the premiums of our county fairs, and what benefit is that class of horses as far as their utility to farmers is concerned? It is a mistake, and what gain is there in keeping and encouraging them? There is another thought which should not be encouraged. The object of fairs is to encourage the farmer in something that is useful and beneficial and will produce useful results and not for mere jockeying and gambling, and there is a species of gambling that follows the speed ring which should be discouraged. At our county fairs and even at our State fair this jockeying and dividing of premiums among them is a feature that should not be encouraged and stimulated by increasing the premiums on that class, the money should go to the useful animals which bring a product and are of utility to the farm, instead of throwing it away to the speed ring.

Dick Jones. The Judge speaks of the vast amount of money in the Horse Department, but he must remember they have to pay back ten per cent. of the whole purse contended for. As to the gambling I wish to say there is none of that on the ground. I never have heard of a bet on the races.

Mr. Ogle. I am not accustomed to speaking in public, but I will give you a little of my experience, since I commenced back in 1872 in the Delaware County Fair. I was associated with twelve persons of that body. We had four ministers of the Gospel and six members of the church. However, I fell in with good people. My impression was, to make a success of an

agricultural fair, that it must be run on the right principle and exclude all persons and gambling in connection with the speed ring. That organization had not that attraction. We run the Fair the first year on this plan and had poor success. The next year we tightened down on the rules on amusements; we kept drawing the rules a little tighter all the time until one morning I was asked if we were going to have prayers in the morning before entering on the business of the day. We continued this for four years, and actually got so we could pay thirty-five cents on the dollar. (Laughter.) The fifth year we thought we must have a speed ring, and offered purses to bring out the people and built a good ring, and soon built up our Fair until we were soon able to pay eighty cents on the dollar. We borrowed the rest and paid up. It was the speed ring that brought success to us. I am opposed to gambling or anything that leads to gambling, but if a man has a good colt which has good blood in it he has a right to put it on the track as well as a farmer has a right to feed a pig and show him in the pen. We are a progressive people and don't set back as they did several years ago. We like amusement, and it has not only worked on our fair grounds, but in the Methodist Church, and we must not draw lines too close if we make a success of the Fair. Some people go to the Fair to look at the vegetables, others to look at the machinery, some go to look at a good horse, while others go to the floral hall. To make it a success you must have amusement that will bring the people out. You want a good track and a good amphitheater. Put up purses higher than you have if you can reach them and you will come out all right. You get your resources at the gate, and unless you have attractions you will not get the resources.

Mr. Smith. It is true there is attraction in the speed of a horse, but the question is whether we should add to the attraction or make some other round. I have had experience of several years in the management of county fairs and tried all devices to make them pay, and as a general rule we have a good fair. Fast horsemen want us to offer greater inducements for the fast stock. We already have a pretty liberal premium list,

but they wanted us to add to it. I told them last year I wanted to make a new department. They wanted to know what it was. I told them instead of offering an additional premium for fast horses let us offer a premium of \$25 for the best Sunday-school producing the best choir of musicians, not less than eight in number. Let us see which will produce the best results, fast horses or singing. We carried this plan out and the Sunday-school brought a greater attendance and more enthusiasm than they had at the grand stand. The fast horsemen gave it up and came over and cheered them. So while we have that feeling we want something to attract it. We all like to see fast horses. I raise them; but at the same time it is not the best thing to offer premiums for fast horses.

Mr. Beeson. It is important that we do what is best for the people in the way of amusements for a time. All will look after the fast horse, and so they will on anything else that is interesting in connection with this exhibition of horses. Is it not a fact that people often lose much money at the fairs? They should go there to improve their stock and farms, but instead they often go there and lose. Does it pay to take this money out of the farmers' pockets and give it to these fast horsemen, who take it out of the country?

E. J. Howland, Marion County. We have a live agricultural society in Marion County, but do not hold any fairs; if we did I should hold out for fast horses and the fastest of fast horses. The State fair affords sufficient object lessons for the people, and the county can not do better than hold monthly meetings. We meet monthly. We have no revenue except the license fund and membership fees, which is appropriated for premiums. We hold little fairs every few months. We have a standing committee that brings up subjects for discussion, and we have very interesting and profitable meetings.

On motion of Mr. Wright a vote was taken to ascertain the sentiment of the Board as to the feasibility of the speed ring in our fairs, which result showed but one dissenting vote.

Board adjourned.

SECOND DAY—AFTERNOON SESSION.

The Board met, with President Davidson in the chair.

V. K. Officer, from the Committee on Fair Grounds, reported the following, which was adopted :

Your Committee to Examine Fair Grounds and Buildings beg leave to report that they find the grounds and buildings in good condition, with the exception of the roof of the main building, which needs some repair.

We would further report that no fires be allowed in the buildings or stalls on said grounds without brick flues extending at least three (3) feet above the roof.

We would further suggest the propriety of inclosing grand stand to protect it against snow and rain blowing in on seats and floor.

Mr. Mitchell offered the following, which was adopted :

Resolved, That this Delegate Board of Agriculture pledge its earnest support to the authorities of Purdue in their untiring efforts in institute work in the State.

Also the following resolution, which was adopted :

WHEREAS, We believe the holding of the World's Fair of 1892 in Chicago would be of mutual interest and profit to American agriculture and the farming classes of this country ; therefore,

Resolved, That the Indiana Delegate and State Boards of Agriculture do hereby declare in favor of Chicago as the place for the World's Fair of 1892.

Mr. Howland offered the following, which was adopted :

Resolved, That in the opinion of the Delegate Board it is desirable that the matter of the enforcement of the fish and game law be presented to the farmers of the State, and to this end we recommend that a short session of the County Farmers' Institutes be held and devoted to such discussion.

E. J. Howland. We have a law in Indiana regulating the fish and game interest. They have appointed a State officer to enforce this law. Now, at the last meeting of the Commission it was the prevailing opinion that the enforcement depended on the farmers, and they seemed satisfied there would be a change in the law in order that the farmers may enforce the law. We know the laws to be enforced must be backed up by public sentiment. My opinion is now that the farmers oppose this law and will not obey it. They do not approve of the fish and game law as it now is, and frequently the violation must take place on their own farms, and there is no way to enforce this law unless they do. I believe it would be the best thing

possible if the farmers would agree on a law they would be willing to enforce, and present the same to the Legislature. This question should be discussed at the Institutes.

The Board then proceeded with the election of new members, with the following result :

- 1st District—Robert Mitchell.
- 2d District—W. W. Berry.
- 3d District—J. Q. A. Seig.
- 4th District—W. B. Seward.
- 8th District—S. W. Dungan.
- 14th District—J. A. McClung.
- 15th District—W. A. Banks.
- 16th District—R. M. Lockhart.

ADDRESSES.

Hon. R. M. Lockhart submitted a paper on "Kinds of Apples to Grow that are Adapted to the Soil and Climate of Indiana," which will be found in this report under the head of Essays.

D. L. Thomas, of Rushville, Indiana, presented an address entitled "Keep the Boys on the Farm," which will be found elsewhere in this report.

Following this Hon. J. Q. A. Seig read a paper on "What Fiber can be Grown by Indiana Farmers as a Successful Substitute for Sisal or Manilla," to be found elsewhere in this report, after which the Board adjourned.

JANUARY 9, 10 A. M.

The Delegate Board met with President Davidson in the chair. The minutes of the previous meetings were read and approved.

Rev. J. S. Jenks presented a paper on "Farming in Palestine," which was well received, creating a lively interest, and calling forth a rising vote of thanks. It will be found elsewhere under the head of Essay.

Hon. Geo. J. Langsdale read a paper on "Creation of the Soil," for which he received the thanks of the Convention.

The Delegate Board adjourned *sine die*.

PROCEEDINGS OF OLD BOARD—1889.

JANUARY 9.

The Board met. The Secretary submitted the following protest :

To the State and Delegate Board of Agriculture :

As the representative of the Wayne, Henry and Randolph County Agricultural Association, located at Dalton, Wayne County, Indiana, I respectfully protest against the issuing of a certificate to the Wayne County Horticultural and Agricultural Association for the purpose of drawing the License Fund of Wayne County, for the following reason: According to the reports made to the State Board by said Association, they have never paid any premiums on live stock, and are not an agricultural society within the meaning of the law, but are merely a horticultural association and do not encourage agriculture in their county, as required by law (hold their fairs in a hall). Their report of 1884 shows \$69 drawn from the county treasury and they paid \$44 premiums; in 1885 they drew \$41 and paid \$120 premiums; in 1886 they drew \$121 and paid \$44 premiums; in 1887 they paid \$77 premiums; in 1888 they make no report, or I failed to find it. We enter no protest against their representation as a horticultural association, but we most respectfully protest against their drawing the License Fund.

All of which is respectfully submitted.

B. B. BEESON.

The Secretary was instructed to withhold the certificate until the February meeting of the Board. Old Board then adjourned *sine die*.

INDIANA STATE FAIR—1889.

Premium Awards.

CATTLE.

THOMAS NELSON AND J. Q. A. SEIG, Superintendents.

(Where no State is mentioned, Indiana is understood.)

CLASS I—*Shorthorns.*

Bull, 3 years old and over, Thomas Wilhoit, Middletown.	\$25 00
Second, J. G. Robbins & Sons, Horace	12 00
Bull, 2 years old and under 3, J. G. Robbins & Sons, Horace	20 00
Bull, 1 year and under 2, Thomas Wilhoit, Middletown	16 00
Second, J. G. Robbins & Sons, Horace	8 00
Bull under 1 year, Thomas Wilhoit, Middletown	10 00
Second, Thomas Wilhoit, Middletown	5 00
Cow, 3 years old and over, Thomas Wilhoit, Middletown.	25 00
Second, J. G. Robbins & Sons, Horace	12 00
Cow, 2 years old and under 3, Thomas Wilhoit, Middletown	20 00
Second, Thomas Wilhoit, Middletown	10 00
Heifer, 1 year and under 2, Thomas Wilhoit, Middletown	16 00
Second, Thomas Wilhoit, Middletown	8 00
Heifer, under 1 year, J. G. Robbins & Sons, Horace	10 00
Second, Thomas Wilhoit, Middletown	5 00
Number of entries, 31.	

Committeeman—Ezra Swain.

CLASS IV—Holstein-Friesians.

Bull, 3 years old and over, S. W. Dungan, Franklin	\$25 00
Second, Stanton Bros., Greenwood	12 00
Bull, 2 years old and under 3, S. W. Dungan, Franklin	20 00
Second, Purdam Bros., South Bend	10 00
Bull, 1 year old and under 2, Purdam Bros., South Bend.	16 00
Second, W. H. Keller, Corydon	8 00
Bull, under 1 year, S. W. Dungan, Franklin	10 00
Second, Purdam Bros., South Bend.	5 00
Cow, 3 years old and over, W. H. Keller, Corydon.	25 00
Second, Purdam Bros., South Bend	12 00
Cow, 2 years old and under 3, W. H. Keller, Corydon	20 00
Second, Stanton Bros., Greenwood	10 00
Heifer, 1 year old and under 2, S. W. Dungan, Franklin.	16 00
Second, S. W. Dungan, Franklin.	8 00
Heifer, under 1 year, S. W. Dungan, Franklin	10 00
Second, S. W. Dungan, Franklin.	5 00
Number of entries, 91.	

Committeeman—J. C. Shirley.

CLASS VI—Jerseys.

Bull, 3 years old and over, W. A. Ketcham, Indianapolis.	\$25 00
Second, Cochran & Son, Spiceland	12 00
Bull, 2 years old and under 3, White River Jersey Cattle Co., Muncie.	20 00
Second, W. A. Ketcham, Indianapolis	10 00
Bull, 1 year old and under 2, Peter Rabb, Indianapolis	16 00
Second, Garretson Bros., Pendleton.	8 00
Cow, 3 years old and over, Garretson Bros., Pendleton	25 00
Second, Garretson Bros., Pendleton.	12 00
Cow, 2 years old and under 3, W. A. Ketcham, Indianapolis	20 00
Second, Peter Raab, Indianapolis	10 00
Heifer, 1 year old and under 2, H. H. Wheatcraft, Greenwood	16 00
Second, H. H. Wheatcraft, Greenwood	8 00
Heifer under 1 year, W. A. Ketcham, Indianapolis	10 00
Second, H. H. Wheatcraft, Greenwood	5 00
Number of entries, 65.	

Committeeman—J. C. Shirley.

CLASS VII—Sweepstakes—Beef Breeds of Cattle.

Bull, any age, Thomas Wilhoit, Middletown	\$25 00
Cow or heifer, any age Thomas Wilhoit, Middletown	25 00

Sweepstakes—Milk Breeds.

Bull, any age, S. W. Dungan, Franklin.	\$25 00
Cow or heifer, any age, W. H. Keller, Corydon	25 00

Herd of Beef Breeds of Cattle.

Herd of five, consisting of bull, of any age, 1 cow, 3 years old and over, 1 heifer, 2 years old and under 3, 1 heifer, 1 year old and under 2, 1 heifer calf under 1 year, Thomas Wilhoit, Middletown.	100 00
Second, J. G. Robins & Sons, Horace.	50 00
Young herd of cattle, to consist of 1 bull and 4 heifers, all under 2 years of age, Thomas Wilhoit, Middletown.	75 00
Second, Thomas Wilhoit, Middletown	35 00
Bull and three of his get (one must be a calf), Thomas Wilhoit, Middletown	25 00
Second, J. G. Robins & Sons, Horace	12 00
Number of entries, 57.	

Committeemen—R. B. Pierce, Creston, Ill.; Tom Smith, Center, Ill.

CLASS VIII—Dairy Breeds of Cattle.

Herd consisting of 1 bull, 2 years old and over; 1 cow, 3 years old or over; 1 heifer, 2 years old and under 3; 1 heifer, 1 year old and under 2; heifer calf under 1 year; W. H. Keller, Corydon	100 00
Second, S. W. Dungan, Franklin.	50 00
Young herd of cattle, to consist of 1 bull and 4 heifers, all under 2 years of age. W. H. Keller, Corydon	75 00
Second, S. W. Dungan, Franklin.	35 00
Bull and 3 of his get (one must be a calf.) S. W. Dungan, Franklin	25 00
Second, W. H. Keller, Corydon	12 00
Number of entries, 32.	

Committee—R. B. Pierce, Creston, Ill.; Claude Mathews, and John Strange.

Special premiums offered by the American Shorthorn Breeders' Association under the following conditions:

Pure Bred Shorthorn Dairy Cows.

Cows, 2 years old and over, with milk and butter test; cow, 4 years old and over. Mrs. Virginia C. Meridith, Cambridge City.	\$50 00
---	---------

Committeeman—J. C. Shirley.

HORSES.

E. H. PEED, Superintendent.

CLASS IX—*French Draft.*

Stallion, 4 years old and over, W. G. Wilson, Mohawk.	\$35 00
Second, Sylvester S. Crogan, Logansport	18 00
Stallion, 2 years old and under 3, Bridgeland & Berry, Indianapolis. . . .	16 00
Stallion, 1 year old and under 2, Bridgeland & Berry, Indianapolis	10 00
Second, Bridgeland & Berry, Indianapolis	5 00
Stallion colt under 1 year, Bridgeland & Berry, Indianapolis	8 00
Mare, 4 years old and over, Bridgeland & Berry, Indianapolis	20 00
Second, Bridgeland & Berry, Indianapolis	10 00
Mare, 3 years old and under 4, Bridgeland & Berry, Indianapolis.	16 00
Mare, 2 years old and under 3, Bridgeland & Berry, Indianapolis.	12 00
Mare, 1 year old and under 2, Bridgeland & Berry, Indianapolis	10 00
Mare colt under 1 year, Bridgeland & Berry, Indianapolis	8 00

Number of entries, 19.

Committeeman—R. F. Small.

CLASS X—*Clydesdale and English Shire.*

Stallion, 4 years old and over, Dye & Stillwell, Troy, O	\$35 00
Second, Banks & Closser, Laporte	18 00
Stallion, 3 years old and under 4, W. L. Risk, Greensboro	25 00
Second, Dye & Stillwell, Troy, O	13 00
Stallion, 2 years old and under 3, Banks & Closser, Laporte	16 00
Second, Dye & Stillwell, Troy, O	8 00
Stallion, 1 year old and under 2, Fisher & Gillson, London, Canada	10 00
Second, Fisher & Gillson, London, Canada	5 00
Stallion colt, under 1 year, Dye & Stillwell, Troy, O.	8 00
Mare, 4 years old and over, W. L. Risk, Greensboro	20 00
Second, Door Prairie Live Stock Association, Door Village.	10 00
Mare, 3 years old and under 4, Door Prairie Live Stock Association, Door Village	16 00
Second, Banks & Closser, Laporte	8 00
Mare, 2 years old and under 3, Banks & Closser, Laporte	12 00
Second, Dye & Stillwell, Troy, O	6 00
Mare, 1 year old and under 2, Banks & Closser, Laporte	10 00
Second, Banks & Closser, Laporte	5 00
Mare colt, under 1 year, Banks & Closser, Laporte.	8 00

Number of entries, 38.

Committeeman—W. W. Danford.

CLASS XI—Belgian Horses.

Stallion, 4 years old and over, Lee S. Brown, Carmel	\$35 00
Second, Wabash Importing Co., Wabash	18 00
Stallion, 3 years old and under 4, Wabash Importing Co., Wabash	25 00
Second, Wabash Importing Co., Wabash	13 00
Stallion, 2 years old and under 3, Wabash Importing Co., Wabash	16 00
Second, Wabash Importing Co., Wabash	8 00
Mare, 4 years old and over, Wabash Importing Co., Wabash	20 00
Second, Wabash Importing Co., Wabash	10 00
Mare, 3 years old and under 4, Wabash Importing Co., Wabash	16 00
Second, Wabash Importing Co., Wabash	8 00
Mare colt, under 1 year, Wabash Importing Co., Wabash	8 00

Committeeman—R. F. Small.

DRAFT HERD—All Classes.

Herd of six, consisting of one stallion, one mare 4 years old and over, one 3 years old and under 4, one 2 years old and under 3, one 1 year old and under 2, and one suckling filly, Banks & Closser, La- porte.	\$100 00
Second, Bridgeland & Berry, Indianapolis	50 00
Stallion and three of his get (one suckling), Banks & Closser, Laporte.	25 00
Second, Lee S. Brown, Carmel.	12 00
Number of entries, 22.	

Committeeman—W. W. Danford.

CLASS XII—Cleveland Bays and French Coach.

Stallion 4 years old and over, Samuel Studebaker, South Bend	\$35 00
Second, Banks & Closser, Laporte	18 00
Stallion 3 years old and under 4, Banks & Closser, Laporte	25 00
Second, Dye & Stillwell, Troy, Ohio	13 00
Stallion 2 years old and under 3, Banks & Closser, Laporte	16 00
Second, Wabash Importing Co., Wabash	8 00
Stallion 1 year old and under 2, Fisher & Gillson, London, Canada	10 00
Mare 3 years old and under 4, John W. Fort, Indianapolis.	16 00
Number of entries, 18.	

Committeeman—W. W. Danford.

CLASS XIII—Horses for General Purposes.

Stallion 4 years old and over, J. S. Rich, Morningview, Kentucky.	\$35 00
Second, C. C. Paddock, Greenville, Ill	18 00
Stallion 3 years old and under 4, Lee Ford, Knightstown	25 00
Second, John A. Gray, Rushville	13 00

PREMIUM AWARDS.

117

Stallion 2 years old and under 3, P. Morningstar, Mooresville	\$16 00
Second, Fort Bros., Indianapolis.	8 00
Stallion 1 year old and under 2, Fisher & Gillson, London, Canada	10 00
Stallion colt under 1 year, W. L. Risk, Greensborough.	8 00
Second, James L. Stone, Clermont	4 00
Mare 4 years old and over, Tanglewood Stock Farm, Indianapolis	20 00
Second, Horace F. Wood, Indianapolis.	10 00
Mare 3 years old and under 4, Fort Bros., Indianapolis	16 00
Second, Tanglewood Stock Farm, Indianapolis	8 00
Mare 2 years old and under 3, Fort Bros., Indianapolis	12 00
Second, L. H. M. Brown, Brightwood	6 00
Mare colt under 1 year, Lee S. Brown, Carmel	8 00
Second, G. W. Rogers, Columbus	4 00
Gelding 3 years old and over, Lee Holtzman, Indianapolis	25 00
Second, Lee Fort, Knightstown	12 00
General purpose team (stallions barred), Horace Wood, Indianapolis	20 00
Second, Wm. E. Wood, Indianapolis.	10 00
Number of entries, 86.	

Committeeman—W. W. Danford.

CLASS XIV—Light Harness Horses.

DICK JONES, Superintendent.

Stallion, 4 years old and over, Berry Randall, Indianapolis	\$35 00
Second, Conner & Riddell, Union Stock Yards, Cincinnati, Ohio	18 00
Stallion, 3 years old and under 4, F. M. Rottler, Indianapolis	25 00
Second, J. T. Higgins, New Marysville	13 00
Stallion, 2 years old and under 3, Geo. W. Scott, Haughville	16 00
Second, Henly & Kirk, Spiceland	8 00
Stallion, 1 year old and under 2, Geo. W. Scott, Haughville	10 00
Second, N. A. Randall, Indianapolis	5 00
Stallion colt under 1 year, N. A. Randall, Indianapolis	8 00
Second, James Robey, Sabine	4 00
Mare, 4 years old and over, John Dickerson, Greensburg	20 00
Second, Rensselaer Stock Farm, Rensselaer	10 00
Mare, 3 years old and under 4, Geo. W. Scott, Haughville	16 00
Second, D. R. Brown, Indianapolis	8 00
Mare, 2 years old and under 3, Geo. W. Scott, Haughville	12 00
Mare, 1 year old and under 2, W. W. Christy, Indianapolis	10 00
Second, Geo. W. Scott, Haughville	5 00
Mare, colt under 1 year, C. C. Crockett, Richmond	8 00
Second, Geo. W. Scott, Haughville	4 00

Gelding, 3 years old and over, James Hazelton, Indianapolis	\$25 00
Second, Willard Wiggam, Paris Crossing	12 00
Light harness team (stallions barred), Hiram Howland, Howland P. O . . .	20 00
Second, W. R. Chastin, New Marysville	10 00

Light Harness Herd.

Herd of six, consisting of one stallion, one mare 4 years old and over, one 3 years old and under 4, one 2 years old and under 3 and one 1 year old and under 2, and one sucking filly, Geo. W. Scott, Haugh- ville	\$100 00
Second, Lloyd Parker, Pittsboro	50 00
Stallion and three of his get (one suckling), Geo. W. Scott, Haughville . .	25 00
Second, Lloyd Parker, Pittsboro	12 00

EQUESTRIANISM.

Equestrienne, Mrs. Grace Foster, Greenwood	\$25 00
Second, Mrs. Eva Riddle, Hebron, Ky	15 00

Saddle Horses.

Gelding or mare any age, Conner & Riddle, Cincinnati, Ohio	10 00
Number of entries, 100.	

Committee—A. W. Powell, W. L. Risk, D. L. Thomas.

CLASS XV—Sweepstakes on Horses.

Stallion, any age, draft, Banks & Closser, Laporte	\$25 00
Stallion, any age, general purpose, P. Morningstar, Mooresville	25 00
Stallion, any age, light harness, Conner & Riddle, Cincinnati	25 00
Mare, any age, draft, W. L. Risk, Greensborough	20 00
Mare, any age, general purpose, Tanglewood Stock Farm, Indianapolis . .	20 00
Mare, any age, light harness, John Dickerson, Greensburg	20 00
Brood mare with colt, draft, Dye & Stillwell, Troy, Ohio	10 00
Brood mare with colt, general purpose, James L. Stowe, Clermont	10 00
Brood mare with colt, light harness, Berry Randall, Indianapolis	10 00
Number of entries, 101.	

Committee—W. T. Downing, Wm. I. Loffell, J. W. Sligar.

Ponies—All kinds.

Stallion, 4 years old and over, Banks & Closser, Laporte	\$8 00
Second, Horace F. Wood, Indianapolis	4 00
Mare, 4 years old and over, Horace F. Wood, Indianapolis	8 00
Mare, 3 years old and under 4, Horace F. Wood, Indianapolis	6 00
Mare, 2 years old and under 3, Horace F. Wood, Indianapolis	5 00
Number of entries, 16.	

Committeeman—W. W. Danford.

CLASS XVI—Jacks, Jennets and Mules.

E. H. PRED, Superintendent.

Jack, 2 years old and under 3, A. Sigler, Clinton Falls	\$10 00
Second, W. M. Hudson, Centerton	5 00
Jack, 1 year old and under 2, A. Sigler, Clinton Falls	8 00
Second, W. M. Hudson, Centerton	4 00
Pair of mules, 3 years old and over, K. Munter, Indianapolis	20 00
Second, W. Berner, Indianapolis	10 00
Number of entries, 7.	

Sweepstakes on Jacks and Jennets.

Jack, any age, A. Sigler, Clinton Falls	\$15 00
---	---------

CLASS XVII—Speed List.

DICK JONES, Superintendent.

Three-year-old Trot—Purse, \$300 :

Optimist—M. L. Hare, Indianapolis	\$150 00
Genesee—George Shambes, Shelby, Ohio	100 00
Time—2:41½, 2:36½, 2:32¾, 2:38½.	

2:37 Pace—Purse, \$300 :

Creeping Kate—George Wormouth, Clayton	150 00
Grey Cloud—W. B. Legg, Raleigh	100 00
Cap P—Henry J. Prier, Indianapolis	50 00
Time—2:33½, 2:34½, 2:30, 2:37¾.	

Pony, Running, Half-mile—Purse, \$15 :

A. T. LaDuque, Connersville	3 00
Fort Brothers, Indianapolis	3 00
George Earhart, Indianapolis	3 00
Alfred Greenan, Indianapolis	3 00

2:37 Trot—Purse, \$300 :

Middle Way—S. H. Railsback, Centerville	150 00
Joe—Rensselaer Stock Farm, Rensselaer	100 00
Lew Wawn—P. C. Carr, Milford, Ills.	50 00
Time—2:36½, 2:35¾, 2:37.	

Three-minute Trot—Purse, \$300 :

Wyandotte—Brook Legg, Raleigh	\$150 00
Cecil—J. W. Hymer, Roachdale	100 00
Tyro—John Dickerson, Greensburg	50 00
Time—2:44½, 2:42½, 2:38½.	

Running Race, Half-mile, best two in three—Purse, \$100 :

Lillie Lochiel—D. R. Newman & Bro., Bloomington	50 00
Walker—William Beatty, Knox	35 00
Sugg—L. D. Koontz, Yorktown	15 00
Time—:53, :52.	

Free-for-all Pace—Purse, \$200 :

Monkey Rolla—C. M. C. Weadon, Decatur, Ills.	100 00
Finley—John Dickerson, Greensburg	65 00
Time—2:23, 2:25, 2:24.	

2:30 Trot—Purse, \$300 :

Jennie B—John Dickerson, Greensburg	150 00
Champion M—Shelby C. Pruett, Rockville	100 00
Mascotte Bob—J. M. Phelps, New Castle, Ills.	50 00
Time—2:32, 2:30, 2:30½, 2:32.	

Running Race, One Mile and Repeat—Purse, \$130 :

Lillie Lochiel—Newman Bros., Bloomington	70 00
Ida M—Green Wilson, Waldron	45 00
Billy Parker—Dennis Wilson, St. Paul	15 00
Time—1:53½, 1:51½.	

Stallion Trot—Purse, \$300 :

Jno. Dickson—Mark Hopkins, St. Clair, Mich.	150 00
Shiloh—S. H. Hayes, Joliett, Ills	100 00
Champion Medium—S. C. Pruett, Rockville	50 00
Time—2:33, 2:31½, 2:30, 2:31½.	

***Consolation Purse, \$120—To be divided equally.**

Billy G—W. T. Downing, Decatur, Ills.	60 00
Bulwer—Buck Dickerson, Greensburg	60 00
Time—2:23½, 2:26½, 2:34½.	

2:50 Pace—Purse, \$300 :

Strathmore—G. W. Mallory, Middleton	150 00
Rosedale—J. W. Hymer, Roachdale	100 00
Joe Ballard—H. H. Gibbs, Indianapolis	50 00
Time—2:38, 2:37½, 2:38.	

Total number of entries in Speed, 62.

SHEEP.

S. W. DUNGAN, Superintendent.

CLASS XVIII—Fine Wool Sheep, to Include American, Spanish and French Merinos.

Ram 2 years old and over, Cook & Morse, West Mansfield, O	\$12 00
Second, Uriah Privett & Bro., Greensburg	6 00
Ram 1 year old and under 2, Cook & Morse, West Mansfield, O	8 00
Second, Cook & Morse, West Mansfield, O	4 00
Ram lamb, Uriah Privett & Bro., Greensburg	6 00
Second, Cook & Morse, West Mansfield, O	3 00
Pen of two ewes 2 years old and over, Cook & Morse, West Mansfield, O . .	10 00
Second, Uriah Privett & Bro., Greensburg	5 00
Pen of two ewes, 1 year old and under 2, Cook & Morse, West Mansfield, O.	6 00
Second, Uriah Privett & Bro., Greensburg.	3 00
Pen of two ewe lambs, Uriah Privett & Bro., Greensburg	5 00
Second, Cook & Morse, West Mansfield, O	3 00
Five lambs, Uriah Privett & Bro., Greensburg.	8 00

Number of entries, 24.

Committeeman—Cal Darnall, Indianapolis.

CLASS XIX—Long Wool Sheep—Cotswold, Leicester or Lincolns.

Ram 2 years old and over, J. B. Harkless, Knightstown	\$12 00
Ram 1 year old and under 2, Uriah Privett & Bro., Greensburg	8 00
Second, J. B. Harkless, Knightstown	4 00
Ram lamb, J. B. Harkless, Knightstown	6 00
Pen of two ewes 2 years old and over, J. B. Harkless, Knightstown. . . .	10 00
Second, Uriah Privett & Bro., Knightstown	5 00
Pen of two ewes, 1 year old and under 2, Uriah Privett & Bro., Greensburg	6 00
Second, J. B. Harkless, Knightstown	3 00
Pen of two ewe lambs, J. B. Harkless, Knightstown.	5 00
Second, Uriah Privett & Bro., Greensburg	3 00
Five lambs, Uriah Privett & Bro., Greensburg.	8 00
Second, J. B. Harkless, Knightstown	4 00

Number of entries, 21.

Committeeman—Clark Phelps.

CLASS XX—Southdowns.

Ram 2 years old and over, Wilson Bros., Muncie	\$12 00
Second, Uriah Privett & Bro., Greensburg	6 00
Ram 1 year old and under 2, Uriah Privett & Bro., Greensburg.	8 00

Second, Uriah Privett & Bro., Greensburg	\$4 00
Ram Lamb, Uriah Privett & Bro., Greensburg	6 00
Second, Wilson Bros., Muncie	3 00
Pen of 2 Ewes 2 years old and over, Uriah Privett & Bro., Greensburg. . .	10 00
Second, Uriah Privett & Bro., Greensburg	5 00
Pen of 2 Ewes 1 year old and under 2, Uriah Privett & Bro., Greensburg .	6 00
Second, Uriah Privett & Bro., Greensburg	3 00
Pen of 2 Ewe Lambs, Uriah Privett & Bro., Greensburg	5 00
Second, Wilson Bros., Muncie	3 00
Five Lambs, Uriah Privett & Bro., Greensburg	8 00
Number of entries, 20.	

Committeeman—Clark Phelps.

CLASS XXI—Oxfordshire, Shropshire and Hampshire.

Ram 2 years old and over, J. L. Thompson & Son, Marion	\$12 00
Second, J. L. Thompson & Son, Marion.	6 00
Ram 1 year old and under 2, J. L. Thompson & Son, Marion	8 00
Second, J. L. Thompson & Son, Marion	4 00
Ram Lamb, J. L. Thompson & Son, Marion	6 00
Second, J. L. Thompson & Son, Marion	3 00
Pen of 2 Ewes 2 years old or over, J. L. Thompson & Son, Marion	10 00
Second, J. L. Thompson & Son, Marion	5 00
Pen of 2 Ewes 1 year old and under 2, J. L. Thompson & Son, Marion. . .	6 00
Second, J. L. Thompson & Son, Marion	3 00
Pen of 2 Ewe Lambs, J. L. Thompson & Son, Marion	5 00
Second, J. L. Thompson & Son, Marion.	3 00
Five Lambs, J. L. Thompson & Son, Marion	8 00
Second, J. L. Thompson & Son, Marion.	4 00
Number of entries, 21.	

Committteeman—Clark Phelps.

CLASS XXII—Sweepstakes on Sheep—Fine Wool.

Ram any age, Cook & Morse, West Mansfield, Ohio	\$20 00
Ewe any age, Cook & Morse, West Mansfield, Ohio	20 00
Flock consisting of 1 Ram any age, 4 Ewes 1 year old or over, and 2 Ewe Lamba, Cook & Morse, West Mansfield, Ohio	30 00
Second, Uriah Privett & Bro., Greensburg	15 00
Number of entries, 14.	

CLASS XXIII—Sweepstakes on Sheep—Long Wool.

Ram any age, J. B. Hearkless, Knightstown	\$20 00
Ewe any age, Uriah Privett & Bro., Greensburg	20 00
Flock consisting of 1 Ram any age, 4 Ewes 1 year old or over, and 2 Ewe Lamba, J. B. Hearkless, Knightstown	30 00
Second, Uriah Privett & Bro., Greensburg	15 00
Number of entries, 9.	

CLASS XXIV—Sweepstakes—Middle Wool.

Ram any age, J. L. Thompson & Son, Marion.	\$20 00
Ewe any age, J. L. Thompson & Son, Marion	20 00
Flock consisting of 1 Ram any age, 4 Ewes 1 year old or over, and 2 Ewe Lambs, J. L. Thompson & Son, Marion.	30 00
Second, J. L. Thompson & Son, Marion	15 00
Number of entries, 20.	

Committeeman—J. R. Tomlinson.

HOGS.

V. K. OFFICER, Superintendent.

CLASS XXV—Berkshires.

Boar, 2 years old and over, W. A. Maze, Sharpsville	\$12 00
Second, A. S. Gilmour & Co., Greensburg	6 00
Boar, 1 year old and under 2, Driver & Guinn, Arcadia	10 00
Second, Prigg & Bell, Mechanicsburg.	5 00
Boar, under 12 and over 6 months, I. N. Barker, Thorntown	8 00
Second, A. S. Gilmour & Co., Greensburg.	4 00
Boar, under 6 months, I. N. Barker, Thorntown.	5 00
Second, A. S. Gilmour & Co., Greensburg.	3 00
Five shoats under 6 months, A. S. Gilmour & Co., Greensburg	10 00
Second, M. Hibblethwaite, Berlinville, Ohio	5 00
Sow, 2 years old and over, W. A. Maze, Sharpsville	12 00
Second, A. S. Gilmour & Co., Greensburg.	6 00
Sow, 1 year old and under 2, Prigg & Bell, Mechanicsburg	10 00
Second, Driver & Guinn, Arcadia	5 00
Sow, under 12 and over 6 months old, M. Hibblethwaite, Berlinville, Ohio	8 00
Second, Prigg & Bell, Mechanicsburg.	4 00
Sow, under 6 months, I. N. Barker, Thorntown	5 00
Second, A. S. Gilmour & Co., Greensburg.	3 00
Sow and five sucking pigs, Driver & Guinn, Arcadia.	10 00
Second, M. Hibblethwaite, Berlinville, Ohio.	5 00
Number of entries, 101.	

Committeeman—Robert A. Thompson.

CLASS XXVI—Poland China.

Boar, 2 years old and over, Brown & Hinshaw, Winchester.	\$12 00
Second, E. E. Elliott, Knightstown.	6 00
Boar, 1 year old and under 2, Lloyd Mugg & Co., Center.	10 00
Second, Brown, Hinshaw & Robinson Bros., Winchester	5 00
Boar, under 12 and over 6 months old, J. W. Williams & Co., Bryant.	8 00
Second, J. Cunningham, Bunker Hill	4 00
Boar, under 6 months old, Martin Fentress, Kennard	5 00
Second, A. J. Alexander, Burney.	3 00
Five shoats under 6 months old, Milton Edwards, Knightstown	10 00
Second, J. Cunningham & Co., Bunker Hill.	5 00
Sow, 2 years old and over, Lloyd Mugg & Co., Center	12 00
Second, W. J. Chapman, Indianapolis	6 00
Sow, 1 year old and under 2, Mintz Bros., Mohawk	10 00
Second, Lloyd Mugg & Co., Center	5 00
Sow, under 12 and over 6 months, Mintz Bros., Mohawk	8 00
Second, M. Hibblethwaite, Berlinville, Ohio	4 00
Sow, under 6 months, Martin Fentress, Kennard.	5 00
Second, A. W. Ross, Muncie.	3 00
Sow and five suckling pigs, Martin Fentress, Kennard	10 00
Second, W. J. Chapman, Indianapolis	5 00
Number of entries, 207.	

Committeeman—R. A. Thompson.

CLASS XXVII—Chester Whites.

Boar, 2 years old and over, Thompson & Bell, Pittsboro	\$12 00
Second, W. W. Snider, Shelbyville	6 00
Boar, 1 year old and under 2, E. Thatcher, Hillisburg	10 00
Boar, under 12 and over 6 months old, R. S. Russell, Zionsville.	8 00
Second, E. Thatcher, Hillisburg	4 00
Boar, under 6 months old, Wm. Pace, Bicknell	5 00
Second, Thompson & Bell, Pittsboro	3 00
Five shoats under 6 months old, R. S. Russell, Zionsville	10 00
Second, Wm. Pace, Bicknell	5 00
Sow, 2 years old and over, E. Thatcher, Hillisburg	12 00
Second, Thompson & Bell, Pittsboro	6 00
Sow, 1 year old and under 2, Wm. Pace, Bicknell	10 00
Second, Thompson & Bell, Pittsboro	5 00
Sow under 12 and over 6 months old, W. W. Snider, Shelbyville	8 00
Second, E. Thatcher, Hillisburg	4 00
Sow under 6 months old, R. S. Russell, Zionsville	5 00
Second, E. Thatcher, Hillisburg	3 00

Sow and not less than 5 sucking pigs, W. W. Snider, Shelbyville \$10 00
 Second, Wm. Pace, Bicknell 5 00
 Number of entries, 62.

Committeeman—Samuel C. Raush.

CLASS XXVIII—Suffolk, Essex, and other small breeds, regardless of color.

Boar, 2 years old and over, A. C. Green, Winchester \$12 00
 Boar, 1 year old and under 2, Chas. McCleave, New London, Ohio 10 00
 Second, A. C. Green, Winchester 5 00
 Boar, under 12 and over 6 months old, A. C. Green, Winchester 8 00
 Boar, under 6 months, Chas. McCleave, New London, Ohio 5 00
 Second, A. C. Green, Winchester 3 00
 Five shoats under 6 months, Chas. McCleave, New London, Ohio 10 00
 Sow, 2 years old and over, A. C. Green, Winchester 12 00
 Second, Chas. McCleave, New London, Ohio 6 00
 Sow, 1 year old and under 2, A. C. Green, Winchester 10 00
 Sow, under 12 and over 6 months old, A. C. Green, Winchester 8 00
 Second, A. C. Green, Winchester 4 00
 Sow, under six months old, Chas. McCleave, New London, Ohio 5 00
 Number of entries, 38.

Committeeman—Samuel C. Raush.

CLASS XXIX—Sweepstakes on Hogs.

Boar, any age, Lloyd Mugg & Co., Center \$20 00
 Sow, any age, Brown, Hinshaw & Robinson Bros., Winchester 20 00
 Herd of hogs, all owned by one exhibitor or firm, J. Cunningham & Co.,
 Bunker Hill 40 00
 Second, Lloyd Mugg & Co., Center. 20 00
 Boar and five of his get under 12 months, Mintz Bros., Mohawk 20 00
 Second, J. Cunningham & Co., Bunker Hill. 10 00
 Number of entries, 88.

CLASS XXX—Berkshires, Essex, Suffolks and other small breeds.

Boar, any age, A. S. Gilmour & Co., Greensburg. \$20 00
 Sow, any age, Prigg & Bell, Mechanicsburg. 20 00
 Herd of hogs, all owned by one exhibitor or firm, Prigg & Bell, Mechanics-
 burg 40 00
 Second, A. S. Gilmour & Co., Greensburg. 20 00
 Boar and five of his get, Prigg & Bell, Mechanicsburg. 20 00
 Number of entries, 45.

Committee—J. C. Robison, H. B. Jones, R. F. Small.

POULTRY.

J. A. McCLUNG, Superintendent.

CLASS XXXI.

Pair Light Brahma fowls, Major Griffin, Mauzy	\$4 00
Second, Will F. Wright, Noblesville	2 00
Pair Light Brahma chicks, I. N. Barker, Thorntown	4 00
Second, Major Griffin, Mauzy	2 00
Pair Dark Brahma fowls, George Colsher, Noblesville	4 00
Second, Robert Thompson, Pittsboro	2 00
Pair Dark Brahma chicks, George Colsher, Noblesville	4 00
Second, Robert Thompson, Pittsboro	2 00
Pair Buff Cochin fowls, C. H. Johnson & Co, Rushville	4 00
Second, C. H. Johnson & Co., Rushville	2 00
Pair Buff Cochin chicks, C. H. Johnson & Co., Rushville	4 00
Second, C. H. Johnson & Co., Rushville	2 00
Pair Partridge Cochin fowls, I. N. Barker, Thorntown	4 00
Second, B. T. Pace, Salem	2 00
Pair Partridge Cochin chicks, B. T. Pace, Salem	4 00
Second, I. N. Barker, Thorntown	2 00
Pair White Cochin fowls, B. T. Pace, Salem	4 00
Second, W. Allen, Bloomingdale	2 00
Pair White Cochin chicks, T. H. Buck, Morristown	4 00
Second, W. Allen, Bloomingdale	2 00
Pair Black Cochin fowls, B. F. Hill, Indianapolis	4 00
Second, B. F. Hill, Indianapolis	2 00
Pair Black Cochin chicks, B. F. Hill, Indianapolis	4 00
Second, B. F. Hill, Indianapolis	2 00
Pair Barred Plymouth Rock fowls, Charles McCleave, New London, O	4 00
Second, Charles McCleave, New London, O	2 00
Pair Barred Plymouth Rock chicks, I. N. Barker, Thorntown	4 00
Second, T. M. Baldwin, Marion	2 00
Pair White Plymouth Rock fowls, Charles McCleave, New London, O	4 00
Pair White Plymouth Rock chicks, Philip Six, Gwynnville	4 00
Second, T. H. Buck, Morristown	2 00
Pair Silver Wyandotte fowls, Chas. McCleave, New London, Ohio	4 00
Second, Ben. S. Myers, Crawfordsville	2 00
Pair Silver Wyandotte Chicks, Ben. S. Myers, Crawfordsville	4 00
Second, Ben. S. Myers, Crawfordsville	2 00
Pair Golden Wyandotte fowls, D. H. Jenkins, Indianapolis	4 00
Second, B. T. Pace, Salem	2 00

Pair Golden Wyandotte chicks, D. H. Jenkins, Indianapolis..	\$4 00
Second, B. T. Pace, Salem.	2 00
Pair White Wyandotte fowls or chicks, John Harcourt, New Augusta.	4 00
Second, Chas. McCleave, New London, Ohio	2 00
Pair B. B. Red Game fowls	4 00
Second, S. C. Rinker, Daleville	2 00
Pair B. B. Red Game chicks, S. C. Rinker, Daleville.	4 00
Second, S. C. Rinker, Daleville	2 00
Collection Pit Games, Clarke & Frey, Indianapolis	5 00
Second, Clarke & Frey, Indianapolis.	2 00
Pair Langshan fowls, Ben. S. Myers, Crawfordsville	4 00
Second, Ben. S. Myers, Crawfordsville	2 00
Pair Langshan chicks, Ben. S. Myers, Crawfordsville	4 00
Second, Ben. S. Myers, Crawfordsville	2 00
Pair White Leghorn fowls, Wm. Tobin, Indianapolis	4 00
Second, W. Allen, Bloomingdale.	2 00
Pair White Leghorn chicks, Wm. Tobin, Indianapolis.	4 00
Second, W. Allen, Bloomingdale.	2 00
Pair Brown Leghorn fowls, W. Allen, Bloomingdale.	4 00
Second, E. A. Pierce, Indianapolis.	2 00
Pair Brown Leghorn chicks, E. A. Pierce, Indianapolis.	4 00
Second, W. Allen, Bloomingdale.	2 00
Pair Black Leghorn fowls or chicks, J. R. Craig, Indianapolis	3 00
Second, J. R. Craig, Indianapolis	2 00
Pair W. F. Black Spanish fowls, H. Newell, Fort Wayne	3 00
Second, T. H. Buck, Morristown.	2 00
Pair W. F. Black Spanish chicks, H. Newell, Fort Wayne	3 00
Pair W. C. Black Polish fowls or chicks, Charles McCleave, New London, Ohio	3 00
Second, E. A. Meridith, Indianapolis.	2 00
Pair Houdan fowls, H. Allen, Bloomingdale	3 00
Second, C. B. Hallis, Lafayette	2 00
Pair Houdan chicks, H. Allen, Bloomingdale	3 00
Second, H. Allen, Bloomingdale	2 00
Pair Black Java fowls or chicks, T. H. Buck, Morristown	3 00
Second, T. F. McDonough, Indianapolis	2 00
Pair Black Minorca fowls or chicks, Marmon & Pierce, Indianapolis	3 00
Second, B. T. Pace, Salem.	2 00
Pair Golden Hamburg chicks, second, Will F. Wright, Noblesville	1 00
Pair Silver Hamburg fowls, T. H. Buck, Morristown.	3 00
Second, T. H. Buck, Morristown.	1 00
Pair Silver Hamburg chicks, T. H. Buck, Morristown	3 00
Second, T. H. Buck, Morristown.	1 00
Pair Red Cap fowls or chicks, T. H. Buck, Morristown.	3 00
Second T. H. Buck, Morristown	1 00

Pair B. B. Red Game Bantam fowls, W. H. Fry, Indianapolis	\$3 00
Second, F. R. Shepherd & Bro., Indianapolis	1 00
Pair B. B. Red Game Bantam chicks, W. H. Fry, Indianapolis	3 00
Second, W. H. Fry, Indianapolis	1 00
Pair Silver Duckwing Game Bantam fowls or chicks, A. E. Dorsey, Indianapolis	3 00
Second, A. E. Meredith, Indianapolis	1 00
Pair Golden Seabright Bantam fowls, I. N. Barker, Thorntown	2 00
Second, I. N. Barker, Thorntown	1 00
Pair Golden Seabright Bantam chicks, I. N. Barker, Thorntown	2 00
Second, T. F. McDonough, Indianapolis	1 00
Pair Silver Seabright Bantam fowls or chicks, H. Newel, Fort Wayne	2 00
Second, Jerry Carter, White Lick	1 00
Pair Bronze turkeys, old birds, Charles McCleave, New London, Ohio	4 00
Pair bronze turkeys, hatch of 1889, Charles McCleave, New London, Ohio	4 00
Second, B. F. Hill, Indianapolis	2 00
Pair White Holland turkeys, old birds, T. H. Buck, Morristown	4 00
Second, W. Allen, Bloomingdale	2 00
Pair White Holland turkeys, hatch of 1889, W. Allen, Bloomingdale	4 00
Second, T. H. Buck, Morristown	2 00
Pair Embden geese, Chas. McCleave, New London, Ohio	4 00
Second, W. Allen, Bloomingdale	2 00
Pair Toulouse geese, Chas. McCleave, New London, Ohio	4 00
Second, A. E. Dorsey, Indianapolis	2 00
Pair Chinese Geese, S. C. Rinker, Daleville	3 00
Pair Pekin Ducks, Chas. McCleave, New London, Ohio	3 00
Second, A. E. Dorsey, Indianapolis	1 00
Pair Rouen ducks, Chas. McCleave, New London, Ohio	3 00
Second, H. C. Green, Indianapolis	1 00
Pair Aylesbury ducks, T. H. Buck, Morristown	3 00
Second, T. H. Buck, Morristown	1 00
Heaviest cock or cockerel, H. Allen, Bloomingdale	3 00
Second, H. Allen, Bloomingdale	1 00
Heaviest hen or pullet, H. Allen, Bloomingdale	2 00
Second, Chas McCleave, New London, Ohio	1 00
Pen Light Brahmas, Will T. Wright, Noblesville	4 00
Second, I. N. Barker, Thorntown	2 00
Pen Dark Brahmas, Geo. Colsher, Noblesville	4 00
Second, Robert Thompson, Pittsboro	2 00
Pen Buff Cochins, C. H. Johnson & Co., Rushville	4 00
Second, C. H. Johnson & Co., Rushville	2 00
Pen Partridge Cochins, H. Allen, Bloomingdale	4 00
Pen White Cochins, H. Allen, Bloomingdale	4 00
Pen Plymouth Rocks, Barred, T. H. Baldwin, Marion	4 00
Second, Chas. McCleave, New London, Ohio	2 00
Pen Plymouth Rocks, White, Philip Six, Gwynnville	4 00

PREMIUM AWARDS.

129

Pen Wyandottes, Silver Laced, Ben. S. Myers, Crawfordsville.	\$4 00
Second, Ben. S. Myers, Crawfordsville	2 00
Pen Wyandottes, Gold Laced, D. H. Jenkins, Indianapolis.	4 00
Second, D. H. Jenkins, Indianapolis	2 00
Pen Langshans, Ben. S. Myers, Crawfordsville	4 00
Second, Ben. S. Myers, Crawfordsville	2 00
Pen B. B. Red Games, S. C. Rinker, Daleville.	4 00
Pen Brown Leghorns, H. Allen, Bloomingdale	4 00
Second, E. A. Pierce, Indianapolis	2 00
Pen White Leghorns, Wm. Tobin, Indianapolis	4 00
Second, H. Allen, Bloomingdale	2 00
Pen Houdans, H. Allen, Bloomingdale	3 00
Pen Black Spanish, H. Newell, Fort Wayne.	3 00
Second, T. H. Buck, Morristown	2 00
Pen Black Minorcas, Marmon & Pierce, Indianapolis	3 00
Second, Marmon & Pierce, Indianapolis	2 00
Pen Silver Spangled Hamburg, T. H. Buck, Morristown	3 00
Second, S. E. Rinker, Daleville	2 00
Display of Pigeons, not less than 10 varieties, Richard Castenholtz, Indian- apolis.	10 00
Second, Goldwin Smith, Indianapolis	5 00
Number of entries, 413.	

Committeeman—B. N. Pierce.

FARM PRODUCTS.

J. A. McCLUNG, Superintendent.

CLASS XXXIII—Vegetables.

Three cauliflowers, D. Ellwanger & Son, Haughville	\$2 00
Second, Sol. H. Hayes, Elizabethtown, Ohio.	1 00
Six broccoli, D. Ellwanger & Son, Haughville	2 00
Second, John Marvel, Royalton	1 00
Six vegetable eggs, Chas. Becker, West Indianapolis	2 00
Second, D. Ellwanger & Son, Haughville	1 00
Six cucumbers, W. A. Ennis, Clermont.	2 00
Second, Sol. H. Hayes, Elizabethtown, Ohio	1 00
Peck white beans, John Marvel, Royalton	2 00
Second, Whipps Bros., Marion, Ohio	1 00
Peck white navy beans, John Marvel, Royalton.	2 00
Second, John Smock, Philadelphia.	1 00

Peck colored navy beans, D. Ellwanger & Son, Haughville	\$2 00
Two quarts lima beans, John Marvel, Royalton	2 00
Second, Whipps Bros., Marion, Ohio	1 00
Half gallon garden peas, dry, Whipps Bros., Marion, Ohio	2 00
Second, W. H. Hartman, Indianapolis	1 00
Half gallon field peas, dry, Whipps Bros., Marion, Ohio	2 00
Second, Chas. Becker, West Indianapolis	1 00
Half peck peppers, for pickling, W. H. Hartman, Indianapolis	2 00
Second, John Marvel Royalton	1 00
Peck tomatoes, J. C. Groff, Haughville	2 00
Second, D. Ellwanger & Son, Haughville	1 00
Collection tomatoes, Whipps Bros., Marion, Ohio	5 00
Second, D. Ellwanger & Son, Haughville	1 00
Half dozen ears green sweet corn, John Marvel, Royalton	2 00
Second, Whipps Bros., Marion, Ohio	1 00
Half peck dry sweet corn, John Marvel, Royalton	2 00
Second, Whipps Bros., Marion, Ohio	1 00
Three Hubbard squashes, Whipps Bros., Marion, Ohio	2 00
Second, Chas. Becker, West Indianapolis	1 00
Three Marblehead squashes, John Marvel, Royalton	2 00
Second, J. C. Groff, Haughville	1 00
Three crook-neck squashes, W. A. Ennis, Clermont	2 00
Second, Chas. Montgomery, Haughville	1 00
Three California squashes, Whipps Bros., Marion, Ohio	2 00
Second, John Marvel, Royalton	1 00
Largest pumpkin, Chas. Becker, West Indianapolis	2 00
Largest squash, John Marvel, Royalton	2 00
Three field pumpkins, J. C. Groff, Haughville	2 00
Second, D. Ellwanger & Son, Haughville	1 00
Three drum-head cabbages, D. Ellwanger & Son, Haughville	2 00
Second, Whipps Bros., Marion, Ohio	1 00
Three flat Dutch cabbages, D. Ellwanger & Son, Haughville	2 00
Second, Chas. Becker, West Indianapolis	1 00
Three heads cabbage, any other kind, D. Ellwanger & Son, Haughville	2 00
Second, John Marvel, Royalton	1 00
Dozen stalks celery, D. Ellwanger & Son, Haughville	2 00
Second, Chas. Becker, West Indianapolis	1 00
Best collection vegetables, one exhibitor, Whipps Bros., Marion, Ohio	10 00
Second, D. Ellwanger & Son, Haughville	5 00
Number of entries, 207.	

Committee—J. W. C. Shetz, Atica; Wm. Savage, Wagoner;
C. H. Robbins, Rochester.

PREMIUM AWARDS.

131

CLASS XXXIV—*Root Crops.*

Half bushel turnips, Whipps Bros., Marion, Ohio	\$2 00
Second, Chas. Becker, West Indianapolis	1 00
Dozen parsnips, D. Ellwanger & Son, Haughville	2 00
Second, J. C. Groff, Haughville	1 00
Dozen radishes, Chas. Montgomery, Haughville	2 00
Second, Whipps Bros., Marion, Ohio	1 00
Dozen carrots, Whipps Bros., Marion, Ohio	2 00
Second, J. C. Groff, Haughville	1 00
Dozen roots salsify, J. C. Groff, Haughville	2 00
Second, D. Ellwanger & Son, Haughville	1 00
Dozen horse radish, Chas. Becker, West Indianapolis.	2 00
Second, D. Ellwanger & Son, Haughville	1 00
Half dozen long-red beets, J. C. Groff, Haughville	2 00
Second, Chas. Becker, West Indianapolis	1 00
Half dozen turnip beets, John Marvel, Royalton	2 00
Second, Whipps Bros., Marion, Ohio	1 00
Half dozen sugar beets, Chas. Montgomery, Haughville	2 00
Second, D. Ellwanger & Son, Haughville	1 00
Half dozen mangel wurzel beets, Sylvester Johnson, Irvington	2 00
Second, Jerry Brooks, Irvington	1 00
Half peck red onions, Whipps Bros., Marion, Ohio	2 00
Second, Chas. Becker, West Indianapolis	1 00
Half peck yellow onions, Whipps Bros., Marion	2 00
Second, Chas. Becker, West Indianapolis	1 00
Half peck white onions, Whipps Bros., Marion, Ohio	2 00
Second, Sol. H. Hayes, Elizabethtown, Ohio	1 00
Dozen turnip radishes, John Marvel, Royalton	1 00
Second, D. Ellwanger & Son, Haughville	50
Dozen long radishes, Chas. Montgomery, Haughville	1 00
Second, Chas. Becker, West Indianapolis	50
Display of root crops, Chas. Becker, West Indianapolis	5 00
Second, D. Ellwanger & Son, Haughville	3 00
Half gallon white onion sets, J. C. Groff, Haughville	2 00
Second, Sol. H. Hayes, Elizabethtown, Ohio	1 00
Half gallon yellow onion sets, J. C. Groff, Haughville	2 00
Second, Chas. Becker, West Indianapolis	1 00
Number of entries, 176.	

Committee—J. W. C. Shetz, Wm. Savage, C. H. Robbins.

CLASS XXXV—*Potatoes.*

Peck White Star, Whipps Bros., Marion, Ohio	\$2 00
Second, J. W. Montgomery, Carmel	1 00
Peck Dunmore Seedling, J. W. Montgomery, Carmel	2 00
Second, Whipps Bros., Marion, Ohio	1 00

Peck Early Rose, Whipps Bros., Marion, Ohio	\$2 00
Second, J. W. Montgomery, Carmel	1 00
Peck Snowflake, Job W. Hayes, Cleves, Ohio	2 00
Second, Sol. H. Hayes, Elizabethtown, Ohio	1 00
Peck Early Ohio, Whipps Bros., Marion, Ohio	2 00
Second, W. A. Ennis, Clermont	1 00
Peck Pride of the Valley, Whipps Bros., Marion, Ohio	2 00
Second, J. W. Montgomery, Carmel	1 00
Peck Early Vermont, Whipps Bros., Marion, Ohio	2 00
Second, W. H. Bailey, Ben Davis	1 00
Peck Beauty of Hebron, Whipps Bros., Marion, Ohio	2 00
Second, Chas. Montgomery, Haughville	1 00
Peck Clark's No. 1, Whipps Bros., Marion, Ohio	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Burbank Seedling, Whipps Bros., Marion, Ohio	2 00
Second, W. A. Ennis, Clermont	1 00
Peck Empire State, Whipps Bros., Marion, Ohio	2 00
Second, John Marvel, Royalton	1 00
Peck Tholman, Whipps Bros., Marion, Ohio	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Rosy Morn, Whipps Bros., Marion, Ohio	2 00
Peck Early Sunrise, Whipps Bros., Marion, Ohio	2 00
Second, Chas. Montgomery, Haughville	1 00
Peck Red Star, John Marvel, Royalton.	2 00
Second, Whipps Bros., Marion, Ohio	1 00
Peck Green Mountain, J. W. Montgomery, Carmel	2 00
Second, Chas. Montgomery, Haughville	1 00
Peck Bliss Triumphs, John Marvel, Royalton.	2 00
Second, J. W. Montgomery, Carmel	1 00
Peck Michigan Rose, Whipps Bros., Marion, Ohio.	2 00
Second, W. A. Ennis, Clermont	1 00
Peck Pride of America, Whipps Bros., Marion, Ohio	2 00
Second, Chas. Montgomery, Haughville	1 00
Best collection Irish potatoes (10 varieties), Whipps Bros., Marion, Ohio .	10 00
Second, W. A. Ennis, Clermont	5 00
Peck yellow sweet potatoes, D. Ellwanger & Son, Haughville.	2 00
Second, Chas. Becker, West Indianapolis	1 00
Peck red sweet potatoes, Theodore Wilson, Indianapolis	2 00
Second, Chas. Becker, West Indianapolis	1 00
Collection sweet potatoes (5 varieties), Chas. Becker, West Indianapolis .	5 00
Second, D. Ellwanger & Son, Haughville.	3 00
Number of entries, 201.	

Committee—J. W. C. Shetz, Wm. Savage, C. H. Robbins.

CLASS XXXVI—Grain and Seeds.

Twenty-five ears Early Dent field corn, W. H. Hartman, Indianapolis. . .	\$5 00
Second, John Marvel, Royalton	2 00
Twenty-five ears yellow corn, J. D. Whitesides, Franklin.	5 00
Second, Joseph Turner, Sharpsville	2 00
Twenty-five ears white corn, J. D. Whitesides, Franklin	5 00
Second, W. A. Ennis, Clermont	2 00
Twenty-five ears corn, any color, J. E. Heavenridge, Liberty	5 00
Second, W. H. Hartman, Indianapolis	2 00
Twenty-five ears hominy corn, John Marvel, Royalton.	2 00
Second, Sanford Ennis, Clermont	1 00
Peck white popcorn, J. D. Whitesides, Franklin	2 00
Second, John Marvel, Royalton	1 00
Peck red popcorn, Chas. Montgomery, Haughville.	2 00
Second, John Marvel, Royalton	1 00
Peck any other color popcorn, Lee Trout, Franklin	2 00
Second, J. D. Whitesides, Franklin	1 00
Display of corn in ear, 1 peck each variety, J. D. Whitesides, Franklin . .	10 00
Second, John Marvel, Royalton	5 00
Display and variety wheat, 1 quart each variety, Whipps Bros., Marion, Ohio	10 00
Second, John Marvel, Royalton	5 00
Half bushel white wheat, Whipps Bros., Marion, Ohio.	5 00
Second, Job W. Hayes, Cleves, Ohio	2 00
Half bushel red wheat, Geo. Dabert, Marion, Ohio.	5 00
Second, Whipps Bros., Marion, Ohio.	2 00
Half bushel rye, John Marvel, Royalton	2 00
Second, Whipps Bros., Marion, Ohio	1 00
Half bushel white oats, H. C. Crunston, Warren.	2 00
Second, Geo. Dabert, Marion, Ohio	1 00
Half bushel black oats, W. H. Hartman, Indianapolis	2 00
Second, C. H. Marvel, Clermont	1 00
Half bushel buckwheat, Whipps Bros., Marion, Ohio	2 00
Second, W. H. Hartman, Indianapolis	1 00
Half bushel barley, Whipps Bros., Marion, Ohio	2 00
Second, Job W. Hayes, Cleves, Ohio	1 00
Half bushel flax seed, Sanford Ennis, Clermont	2 00
Second, W. A. Ennis, Clermont	1 00
Half bushel millet seed, Sol. H. Hayes, Elizabethtown, Ohio	2 00
Second, W. A. Ennis, Clermont	1 00
Half bushel timothy seed, Job W. Hayes, Cleves, Ohio.	2 00
Second, John Marvel, Royalton	1 00
Half bushel orchard grass seed, Whipps Bros., Marion, Ohio	2 00
Second, John Marvel, Royalton	1 00

Half bushel Hungarian grass seed, Whipps Bros., Marion, Ohio	\$2 00
Second, Job W. Hayes, Cleves, Ohio	1 00
Half bushel Kentucky blue grass seed, John Marvel, Royalton	2 00
Second, Whipps Bros., Marion, Ohio	1 00
Half bushel English blue grass seed, W. A. Ennis, Clermont	2 00
Second, W. H. Hartman, Indianapolis	1 00
Half bushel red clover seed, W. H. Hartman, Indianapolis	2 00
Second, J. C. Groff, Haughville	1 00
Half bushel English clover seed, J. C. Groff, Haughville	2 00
Second, Whipps Bros., Marion, Ohio	1 00
Sample ten pounds broom corn, John Marvel, Royalton	2 00
Second, W. A. Ennis, Clermont	1 00
Collection grain and seeds by one exhibitor, Whipps Bros., Marion, Ohio .	10 00
Second, John Marvel, Royalton	5 00
Number of entries, 300.	

Committee—J. W. C. Shetz, Wm. Savage, C. H. Robbins.

CLASS XXXVIII—Bees and Honey.

Queen Bee, R. S. Russell, Zionsville	\$3 00
Second, R. S. Russell, Zionsville.	2 00
Comb honey, ten pounds, R. S. Russell, Zionsville.	5 00
Second, J. C. Zimmerman, Wabash.	3 00
Extracted honey, twenty pounds, J. C. Zimmerman, Wabash	5 00
Second, R. S. Russell, Zionsville	3 00
Display of honey, product of one apiary, J. C. Zimmerman, Wabash . . .	15 00
Second, R. S. Russell, Zionsville	10 00
Display of wax, ten pounds, J. C. Zimmerman, Wabash	2 00
Second, R. S. Russell, Zionsville	1 00
Display of apiarian supplies, J. C. Zimmerman, Wabash	5 00
Second, R. S. Russell, Zionsville	3 00
Apparatus for manufacturing comb foundation, J. C. Zimmerman, Wabash	2 00
Comb foundation for use in brood nest, Julius Moesch, North Indianapolis .	2 00
Second, R. S. Russell, Zionsville	1 00
Comb foundation for surplus honey, Julius Moesch, North Indianapolis . .	2 00
Second, R. S. Russell, Zionsville	1 00
Honey extractor, J. C. Zimmerman, Wabash	2 00
Second, R. S. Russell, Zionsville	1 00
Wax extractor, J. C. Zimmerman, Wabash	2 00
Second, J. C. Zimmerman, Wabash.	1 00
Section box for surplus honey, J. C. Zimmerman, Wabash	2 00
Second, R. S. Russell, Zionsville	1 00
Display of wholesale package and crates of honey, J. C. Zimmerman, Wabash.	2 00
Second, R. S. Russell, Zionsville	1 00

PREMIUM AWARDS.

135

Display of retail packages for extracted honey, J. C. Zimmerman, Wabash .	\$2 00
Second, R. S. Russell, Zionsville.	1 00
Collection of honey plants (six varieties), Julius Moesch, North Indian-	
apolis.	10 00
Second, R. S. Russell, Zionsville.	5 00
Number of entries, 44.	

Committeeman—I. N. Cotton, Traders' Point.

HORTICULTURAL DEPARTMENT.

R. M. LOCKHART, Superintendent.

CLASS XXXIX.

Twenty varieties apples, Joel Hartman Hudson	\$12 00
Twelve varieties apples, Mrs. Geo. P. Campbell, Bloomington	8 00
Six varieties apples, Sol. H. Hayes, Elizabethtown, Ohio	5 00
Plate Maiden Blush, Philip Parnell, Hudson	1 00
Plate Smith's Cider, Mrs. George P. Campbell, Bloomington	1 00
Plate Ben Davis, Windell & Trotter, Valley City	1 00
Plate Rome Beauty, Windell & Trotter, Valley City	1 00
Plate Wine Sap, Mrs. George P. Campbell, Bloomington	1 00
Plate Rambo, Mrs. George P. Campbell, Bloomington	1 00
Plate Yellow Bellflower, Mrs. George P. Campbell, Bloomington	1 00
Plate Fallwater Tulpehocken, Mrs. George P. Campbell, Bloomington	1 00
Plate Fall Pippin, Sol. H. Hayes, Elizabethtown, Ohio.	1 00
Plate Clayton, Mrs. W. B. Flick, Lawrence	1 00
Plate White Pippin, Sol. H. Hayes, Elizabethtown, Ohio.	1 00
Plate Baldwin, R. M. Lockhart, Waterloo.	1 00
Plate Northern Spy, R. M. Lockhart, Waterloo	1 00
Plate Grimes' Golden, W. A. Workman, Greencastle.	1 00
Plate of Crabs, W. A. Workman, Greencastle	1 00
Plate New Seedling, not before exhibited, R. N. Crooks, Waterloo.	1 00
Ten varieties pears, Sol. H. Hayes, Elizabethtown, Ohio	8 00
Five varieties autumn pears, Sol. H. Hayes, Elizabethtown, Ohio	4 00
Plate Seedling pears, not before exhibited, Sol. H. Hayes, Elizabethtown,	
Ohio	1 00
Show of quinces, not less than twelve specimens, Sol H. Hayes, Elizabeth-	
town, Ohio.	3 00
Show of peaches, Sol. H. Hayes, Elizabethtown, Ohio	3 00
Five varieties of grapes, Sol. H. Hayes, Elizabethtown, Ohio	5 00

Three varieties of grapes Sol. H. Hayes, Elizabethtown, Ohio.	\$3 00
Five clusters grapes, any kind, Sol. H. Hayes, Elizabethtown, Ohio	2 00
Display fruits, all kinds, R. M. Lockhart, Waterloo	20 00
Display fruit by county or local society, Dekalb County, by R. M. Lockhart.	20 00
Three watermelons, Sol. H. Hayes, Elizabethtown, Ohio	5 00
Second, Charles Montgomery, Haughville	2 00
Three nutmeg melons, Whipps Bros., Marion, O.	3 00
Second, Thomas Thatcher, Mapleton	2 00
Largest striped Gypsy melon, Thomas Thatcher, Mapleton	2 00
Largest icing melon, Thomas Thatcher, Mapleton	2 00
Collection of melons of all kinds, Thomas Thatcher, Mapleton	6 00
Number of entries, 155.	

Committee—L. B. Custer, Logansport; James Sanders, Westfield; John W. Ragan, Fillmore.

CLASS XL—Sweepstake Premiums.

Peck of apples, any variety, Philip Parnell, Hudson	\$5 00
Second, R. M. Lockhart, Waterloo	3 00
Third, Miss Vine Brady, Lawrence.	2 00
Peck of pears, any variety, Mrs. W. B. Flick, Lawrence	5 00
Second, Miss Vine Brady, Lawrence	3 00
Third, Sol. H. Hayes, Elizabethtown, O.	2 00
Number of entries, 13.	

Committee—L. B. Custer, James Sanders, John W. Ragan.

CLASS XLI—Plants and Cut Flowers.

PROFESSIONAL.

Twelve palms, Berterman Bros., Indianapolis.	\$10 00
Second, Mrs. Henry Hilker, Indianapolis.	7 00
Eighteen fancy caladiums, Charles Reiman, Indianapolis	8 00
Second, Berterman Bros., Indianapolis	5 00
Third, Mrs. Henry Hilker, Indianapolis	3 00
Twenty-five ferns and lycopodiums, Charles Reiman, Indianapolis	8 00
Second, Berterman Bros., Indianapolis	5 00
Third, Mrs. Henry Hilker, Indianapolis	3 00
Twelve blooming begonias, Berterman Bros., Indianapolis	7 00
Second, Charles Reiman, Indianapolis	4 00
Third, Mrs. Henry Hilker, Indianapolis	2 00
Twelve foliage begonias, Charles Reiman, Indianapolis	7 00
Second, Berterman Bros., Indianapolis	4 00
Third, Mrs. Henry Hilker, Indianapolis	2 00
Twenty-five variegated show plants, Berterman Bros., Indianapolis	8 00
Second, Charles Reiman, Indianapolis	5 00

Third, Mrs. Henry Hilker, Indianapolis	\$3 00
Twelve cannae, Charles Reiman, Indianapolis.	6 00
Second, Berterman Bros., Indianapolis	4 00
Third, Mrs. Henry Hilker, Indianapolis	2 00
Twenty-five astors in bloom, Charles Reiman, Indianapolis	6 00
Second, Berterman Bros., Indianapolis	4 00
Third, J. Larsen, Indianapolis	2 00
Twelve double geraniums, Charles Reiman, Indianapolis	6 00
Second, Berterman Bros., Indianapolis	4 00
Twelve single geraniums, Charles Reiman, Indianapolis	6 00
Second, Mrs. Henry Hilker, Indianapolis	4 00
Twenty-five colens and alternatheras, Berterman Bros., Indianapolis	5 00
Second, Charles Reiman, Indianapolis	3 00
Third, Mrs. Henry Hilker, Indianapolis	2 00
Three flower-stands, filled, Berterman Bros., Indianapolis	5 00
Three hanging baskets, J. Larsen, Indianapolis.	5 00
Second, Charles Reiman, Indianapolis	3 00
Third, Mrs. Henry Hilker, Indianapolis	2 00
Display and arrangement of flowers, Berterman Bros., Indianapolis.	40 00
Second, Charles Reiman, Indianapolis	20 00
Third, Mrs. Henry Hilker, Indianapolis	10 00
Three funeral designs, Berterman Bros., Indianapolis	25 00
Second, Charles Reiman, Indianapolis	15 00
Five basket designs, Berterman Bros., Indianapolis	20 00
Second, Charles Reiman, Indianapolis	15 00
Five bouquets, Berterman Bros., Indianapolis.	10 00
Collection cut flowers in glasses, Berterman Bros., Indianapolis.	10 00
Second, Mrs. Henry Hilker, Indianapolis.	7 00
Third, Charles Reiman, Indianapolis	5 00
Collection cut roses, Mrs. Henry Hilker, Indianapolis	10 00
Second, Berterman Bros., Indianapolis	7 00
Third, Charles Reiman, Indianapolis.	5 00
Collection cut blooms, gladiolus, Mrs. Henry Hilker, Indianapolis	15 00
Second, Berterman Bros., Indianapolis	10 00
Third, Charles Reiman, Indianapolis	3 00
Best and newest show design, Charles Reiman, Indianapolis	40 00
Second, Berterman Bros., Indianapolis	20 00
Best and newest funeral design, Berterman Bros., Indianapolis	40 00
Second, Charles Reiman, Indianapolis	20 00
Number of entries, 70.	

Committee—James Troop, Edward Cerueli.

CLASS XLII—Amateur.

Collection begonias, Mrs. E. A. Parker, Indianapolis	\$5 00
Second, E. M. Bronson, Indianapolis.	3 00
Collection asters, in bloom, E. M. Bronson, Indianapolis.	4 00
Collection cannas, Mrs. Mary B. Danley, Indianapolis.	4 00
Collection climbing and trailing plants, Mrs. Mary B. Danley, Indianapolis	4 00
Collection hanging baskets, Mrs. Mary Danley, Indianapolis	3 00
Second, Mrs. E. A. Parker, Indianapolis	2 00
Third, Miss Vine Brady, Lawrence	1 00
Collection plants, Mrs. Mary B. Danley, Indianapolis	8 00
Collection geraniums, Mrs. Mary B. Danley, Indianapolis	3 00
Second, Bessie T. Tompkins, Indianapolis	2 00
Collection roses, Mrs. Mary B. Danley, Indianapolis.	4 00
Second, E. M. Bronson, Indianapolis.	2 00
Collection verbenas, Mrs. Mary B. Danley, Indianapolis	3 00
Collection dahlias, Mrs. P. D. Stagg, Greensburg	3 00
Second, E. J. Crisler, Greensburg	2 00
Collection gladiolus, Mrs. Mary B. Danley, Indianapolis.	3 00
Design cut flowers, Mrs. Mary B. Danley, Indianapolis	8 00
Second, E. M. Bronson, Indianapolis.	4 00
Third, E. J. Crisler, Greensburg.	2 00
Best specimen plant, any kind, Mrs. Mary B. Danley, Indianapolis, special by Indiana State Florists Association.	
Number of entries, 32.	

Committee—J. Troop, Edward Cerueli.

PREMIUMS OFFERED BY THE INDIANA HORTI- CULTURAL SOCIETY.

Display of fruits of all kinds, Monroe County Horticultural Society . .	\$100 00
Second, Marion County Horticultural Society	50 00
Third, Mitchell District Horticultural Society	25 00
Twenty varieties apples, Jonathan Beard, New Albany	12 00
Twelve varieties apples, Edward Yenowine, Edwardsville	8 00
Plate Maiden Blush, W. H. Neeld, Bloomington	1 00
Plate Fall Pippin, Mrs. W. B. Flick, Lawrence	1 00
Plate Rambo, W. H. Neeld, Bloomington	1 00
Plate Tulpehocken, Mrs. W. B. Flick, Lawrence	1 00
Plate Grimes' Golden, W. A. Workman, Greencastle	1 00
Plate Rome Beauty, W. H. Neeld, Bloomington	1 00

Plate Ben Davis, W. A. Workman, Greencastle	1 00
Plate Wine Sap, W. H. Neeld, Bloomington	1 00
Plate White Pippin, Mrs. W. B. Flick, Lawrence	1 00
Plate Willow Twig, W. H. Neeld, Bloomington	1 00
Plate Clayton, Mrs. W. B. Flick, Lawrence	1 00
Plate Northern Spy, Mrs. W. B. Flick, Lawrence	1 00
Plate Baldwin, Mrs. W. B. Flick, Lawrence	1 00
Plate Yellow Belleflower, W. H. Neeld, Bloomington	1 00
Plate new seedling apple, not before exhibited, W. H. Neeld, Bloomington .	1 00
Plate crabs, Mrs. W. B. Flick, Lawrence	1 00
Plate pears, Mrs. W. B. Flick, Lawrence	1 00
Five varieties pears, Jonathan Beard, New Albany	4 00
Plate peaches, Mrs. W. B. Flick, Lawrence	1 00
Five varieties grapes, Jonathan Beard, New Albany	5 00
Three varieties grapes, Jonathan Beard, New Albany	3 00

Number of entries, 51.

Committeeman—E. Y. Teas, Dunreith, Ind.

GEOLOGY, NATURAL HISTORY, ETC.

CLASS XLIII.

General collection of minerals, Will G. Beach, Indianapolis	\$5 00
Second, Fred. L. King, Indianapolis	2 00
General collection of shells, Will G. Beach, Indianapolis	3 00
Second, Fred. L. King, Indianapolis	2 00
Collection Mound Builders' implements, Hervey S. Humphrey, Indianapolis.	5 00
Collection stuffed and mounted birds, animals and reptiles, illustrating the Natural History of the State, J. E. Rehme, Indianapolis	5 00
Collection skinned birds and animals, J. E. Rehme, Indianapolis	3 00
Collection diurnal lepidoptera, H. B. Ritter, Indianapolis	2 00
Second J. E. Rehme, Indianapolis	1 00
Collection nocturnal lepidoptera, H. B. Ritter, Indianapolis	2 00
Collection insects, H. B. Ritter, Indianapolis	2 00
Second, J. E. Rehme, Indianapolis.	1 00
Collection botanical specimens, Wm. P. Caldwell, Indianapolis	3 00
Second, Mrs. W. A. Moore, Indianapolis	2 00
Collection of curiosities of historical interest, Will G. Beach, Indianapolis.	3 00
Second, Fred. L. King, Indianapolis	2 00

Number of entries, 24.

Committeeman—A. C. Benedict, Indianapolis.

CLASS XLV—Old Ladies' Department.

Silk quilt, fancy patchwork, Mrs. Mary Gigen, Anderson	\$2 00
Second	1 00
Crazy quilt, Mrs. Ilsley, Anderson	2 00
Second, Mrs. J. Leibhardt, Knightstown	1 00
Worsted quilt, Mrs. R. E. Garretson, Galveston	2 00
Second, Mrs. Ann Cole, Remington.	1 00
Calico quilt, Mrs. R. E. Garretson, Galveston	2 00
Second, Mrs. F. A. Shultz, Attica	1 00
Quilt outline, Mrs. H. C. Peed, Noblesville	2 00
Second, Mrs. Ann Montgomery, Rising Sun	1 00
Rug, Mrs. Ilsley, Anderson	2 00
Second, Mrs. E. S. Sill, Monroe, Mich	1 00
Spread, knit, Mrs. Ann Montgomery, Rising Sun	3 00
Second, Mrs. Shonaker, Indianapolis.	2 00
Spread, crochet, Mrs. Mary J. Adams, Hanover.	2 00
Pair silk mittens, hand knit, Mrs. Jane Shull, Vevay	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Pair silk stockings, hand knit, Mrs. J. A. Judson, Paris, Ill	2 00
Pair silk socks, hand knit, Mrs. Jane Shull, Vevay	2 00
Pair woolen stockings, hand knit, Mrs. J. C. Means	1 50
Second, Mrs. J. M. Burr, Paris, Ill.	1 00
Pair woolen socks, hand knit, Mrs. Jane Shull, Vevay	1 00
Pair cotton socks, hand knit, Mrs. Jane Shull, Vevay	1 00
Pair worsted mittens, fancy knit, Mrs. C. Dille, Greensburg.	1 00
Hemstitching, Mrs. Jane Shull, Vevay	2 00
Second, Mrs. Susan Dunkerly, Covington	1 00
Drawn work, Mrs. H. Weekemeyer, Richmond	2 00
Second, Mrs. A. R. Barney, Marion	1 00
Table cover, embroidered, Mrs. C. Dille, Greensburg	2 00
Second, Mrs. Mary Gigen, Anderson	1 00
Table scarf, embroidered, Mrs. Jane Shull, Vevay	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Table scarf, not embroidered, Mrs. Payne, Wabash	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Lace display, hand-made, Mrs. Ann Montgomery, Rising Sun	2 00
Second, Mrs. Jane Shull, Vevay	1 00
Embroidery, Mrs. C. Dille, Greensburg	2 00
Second, Mrs. J. Liebhardt, Knightstown	1 00
Embroidery, cotton or linen, Mrs. J. Leibhardt, Knightstown.	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Embroidery, silk specimen, Mrs. C. Dille, Greensburg	2 00
Second, Mrs. Isley, Anderson	1 00
Embroidery, worsted specimen, Mrs. Jane Shull, Vevay	2 00
Second, Mrs. J. Liebhardt, Knightstown	1 00

PREMIUM AWARDS.

141

Applique, colored specimen, Mrs. C. Dille, Greensburg.	\$2 00
Second, Mrs. J. Leibhardt, Knightstown	1 00
Painting, display, Mrs. J. M. Dodd, city	2 00
Second, Mrs. J. Leibhardt, Knightstown	1 00
Number of entries, 174.	

Committee—Mrs. E. C. Nicholas and Mrs. Emma Coffman.

CLASS XLVI—Knitting and Crochet Work.

Infant's knit shirt, Miss Jennie Judson, Paris, Ill	\$1 00
Infant's crochet shirt, Mrs. R. H. Greble, Noblesville	1 00
Infant's knit socks, Mrs. Cal. Burns, Greensburg	1 00
Pair silk mittens, hand knit, Mrs. H. A. Bowman, Covington	2 00
Second, Mrs. A. G. Jackson, Vevay.	1 00
Pair woolen mittens, hand knit, Mrs. Geo. Rowland, Covington.	1 50
Second, Mrs. H. A. Bowman, Covington.	1 00
Pair silk stockings, hand knit, Mrs. Cal Burns, Greensburg	2 00
Second, Mrs. A. G. Jackson, Vevay	1 00
Pair fancy woolen stockings, hand knit, Mrs. P. D. Stagg, Greensburg	1 50
Second, Mrs. Cal Burns, Greensburg	1 00
Thread or silk crochet baby cap, Mrs. E. B. Kirk, Shelbyville	2 00
Second, Miss May Herron, Indianapolis	1 00
Crochet fascinator, Mrs. Pearl Dobell, Indianapolis	2 00
Second, Mrs. Lide Ramsey, Indianapolis	1 00
Crochet sacque, Miss Jennie Judson, Indianapolis	1 50
Second, Miss Fannie Joseph, Noblesville	1 00
Knit sacque, Mrs. Allen Sammons, Indianapolis.	1 50
Crochet tidy, Miss Ella Walls, Lebanon.	1 50
Second, Mrs. R. Greble, Noblesville	1 00
Thread tidy, knit, Mrs. A. G. Jackson, Vevay	1 50
Second, Mrs. C. Dille, Greensburg	1 00
Afghan, Mrs. C. Dille, Greensburg	2 00
Second, Mrs. Sophia Grove, Anderson	1 00
Afghan, infant's, Mrs. J. E. Lucas, Indianapolis.	1 50
Second, Mrs. C. Dille, Greensburg	1 00
Counterpane, knit, Mrs. W. A. Wainwright, Noblesville	2 00
Second, Mrs. L. Baldwin, Indianapolis	1 00
Counterpane, crochet, Mrs. M. A. Gillett, Indianapolis	2 00
Second, Mrs. Hester Klick, Indianapolis	1 00
Lace bed set, Mrs. Sophia Grove, Anderson	2 00
Second, Miss Lydia Wegher, Indianapolis.	1 00
Crochet lace display, Mrs. Sophia Grove, Anderson	2 00
Second, Mrs. J. E. Lucas, Indianapolis	1 00
Knit lace display, Miss Fannie McCormick, Indianapolis.	2 00
Second, Mrs. W. A. Wildhack, Indianapolis	1 00

Crochet shirt, Miss May Herron, Indianapolis.	\$2 00
Second, Miss Lyda Ramsey, Indianapolis.	1 00
Knit shirt, Mrs. Newton Teter, Noblesville	2 00
Crochet slippers, Mrs. Allen Sammons, Indianapolis	2 00
Second, Miss Jennie Means, Paris, Ill	1 00
Silk purse, Miss Fannie McCormick, Indianapolis	1 50
Second, Mrs. C. Dille, Greensburg	1 00
Vest front, crochet, Mrs. Schad, Indianapolis	" Worthy."
Number of entries, 236.	

Committee—Mrs. E. C. Nicholas and Mrs. Emma Coffman.

CLASS XLVII—Lace Work.

Point lace display, Miss Belle S. Reed, Hull's Mills	\$3 00
Second, Miss W. H. Pontius, Crawfordsville	2 00
Point lace specimen, Miss Belle S. Reed, Hull's Mills	2 00
Second, Mrs. W. H. Pontius, Crawfordsville	1 00
Tatting display, Mrs. E. B. Kirk, Shelbyville	2 00
Second, Mrs. E. B. Hunt, Rising Sun.	1 00
Rick-rack work display, Mrs. E. B. Kirk, Shelbyville	2 00
Second, Mrs. A. Bruner, Indianapolis	1 00
Novelty braid display, Miss Pearl Dobell, Indianapolis	2 00
Second, Miss Fannie Joseph, Noblesville	1 00
Scrim tidy, Miss Emma Gifford, Indianapolis.	2 00
Second, Mrs. R. H. Greble, Noblesville.	1 00
Number of entries, 87.	

Committee—Mrs. E. C. Nicholas and Mrs. Emma Coffman.

CLASS XLVIII—Embroidery.

Linen, Mrs. Cal. Burns, Greensburg	\$2 00
Second, Mrs. P. D. Stagg, Greensburg.	1 00
White cotton, Mrs. C. Dille, Greensburg	2 00
Second, Mrs. Cal. Burns, Greensburg	1 00
Colored cotton, Mrs. Ed. Hendrickson, Indianapolis	2 00
Second, Mrs. Eva Spaulding, Wabash	1 00
Lunch set, Mrs. A. G. Jackson, Vevay	3 00
Napkin set, Mrs. Dugan, Indianapolis	2 00
Second, Mrs. Dugan, Indianapolis	1 00
Doyley set, Miss Anta Dunning, Marion	2 00
Second Mrs. Ed. Hendrickson, Indianapolis	1 00
Tray cloth, Mrs. Jacob Fox, Indianapolis.	2 00
Second, Mrs. S. E. Hills, Delaware, Ohio	1 00
Handkerchief, Miss Jennie Means, Paris, Ill	2 00
Second, Miss Fannie Joseph, Noblesville	1 00

White silk display, Mrs. S. E. Hills, Delaware, Ohio.	\$3 00
Second, Mrs. C. Dille, Greensburg	2 00
Colored silk, Miss Ella Wills, Lebanon.	3 00
Second, Mrs. S. E. Hills, Delaware, Ohio	2 00
Silk skirt, Mrs. E. B. Kirk, Shelbyville.	2 00
Second, Mrs. S. E. Hills, Delaware, Ohio	1 00
Silk infant's shawl, Mrs. J. Leibhardt, Knightstown	2 00
Second, Mrs. Cal. Burns, Greensburg	1 00
Table cover, Mrs. Dugan, Indianapolis	3 00
Second, Miss Anna Weghorst, Indianapolis	2 00
Table scarf, Mrs. E. H. Rous, Crawfordsville	2 00
Second, Mrs. J. H. Greenstreet, Indianapolis	1 00
Piano scarf, Mrs. Allen Sammons, Indianapolis	2 00
Second, Mrs. J. Leibhardt, Knightstown	1 00
Sofa cushion, Mrs. E. B. Kirk, Shelbyville	2 00
Second, Mrs. E. M. Casterline, Indianapolis.	1 00
Toilet cushion, Mrs. E. H. Rous, Crawfordsville.	2 00
Second, Mrs. P. D. Stagg, Greensburg	1 00
Mantel lambrequin, Mrs. C. Dille, Greensburg	3 00
Second, Mrs. Jessie Cole, Richmond	2 00
Outline display, Miss Fannie McCormick, Indianapolis	2 00
Second, Miss Ella Wells, Lebanon	1 00
Outline specimen, Miss Jennie Means, Paris, Ill.	2 00
Second, Miss Fannie McCormick, Indianapolis	1 00
Kensington, specimen, Mrs. C. C. Goodale	2 00
Second, Mrs. S. C. Hills, Delaware, Ohio	1 00
Tapestry, Mrs. E. B. Kirk, Shelbyville	2 00
Second, Mrs. W. A. Wainwright, Noblesville	1 00
Chenille, specimen, Miss Ella Wills, Lebanon.	2 00
Second, Mrs. W. C. Mason, Crawfordsville	1 00
Arasene, wool, Mrs. Jos. Lauer, Indianapolis	2 00
Arasene, silk, Mrs. W. C. Mason, Crawfordsville	2 00
Second, Mrs. Kate Payne, Wabash	1 00
High art needlework, Miss Ella Wills, Lebanon.	3 00
Second, Miss Minnie A. Coffin, Indianapolis	1 00
Ribbon, specimen, Miss Jennie Means, Paris, Ill	2 00
Second, Mrs. Casterline, Indianapolis	1 00
Smyrnasene, specimen, Mrs. C. Dille, Greensburg	2 00
Second, Mrs. Sammons, Indianapolis.	1 00
Fire screen, mounted, Mrs. W. C. Mason, Crawfordsville	3 00
Second, Mrs. L. E. Campbell, Indianapolis	1 00
Tinting and embroidery, Miss Fannie McCormick, Indianapolis	2 00
Second, Mrs. W. C. Mason, Crawfordsville	1 00
Rope, silk or linen, Miss Jennie Means, Paris, Ill	2 00
Second, Mrs. Jos. Lauer, Indianapolis	1 00

Queen Ann darning, Miss Minnie A. Coffin, Indianapolis.	\$2 00
Second, Mrs. Sammons, Indianapolis.	1 00
Roman embroidery, Mrs. Langlois Martin, St. Louis, Mo.	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Sorrento embroidery, Mrs. C. Dille, Greensburg :	2 00
Second, Mrs. C. C. Goodale, Indianapolis	1 00
Etching in silk, Miss Ella Wills, Lebanon	3 00
Second, Mrs. Sammons, Indianapolis	2 00
Towel, Mrs. C. Dille, Greensburg	2 00
Second, Miss Jennie Means, Paris, Ill	1 00
Number of entries, 413.	

Committee—Mrs. O. E. Holloway and Miss Lulu Davidson.

CLASS XLIX—Sewing-Machine and Hand.

Machine work, apron, Mrs. Sophia Grove Anderson	\$2 00
Second, Mrs. Mary Cottinging, Noblesville	1 00
Quilt, velvet, Mrs. J. Liebhardt, Knightstown.	3 00
Second, Helen Cantant, Indianapolis	2 00
Quilt, silk, needlework, Mrs. Jane Boaz, Indianapolis	3 00
Second, Mrs. Jessie Cole, Richmond	2 00
Crazy quilt, Miss Ella Wills, Lebanon	2 00
Second, Mrs. J. E. Rehme, Indianapolis	1 00
Quilt, silk or velvet, Roman stripe, Mrs. H. D. Hess, Indianapolis	2 00
Hemstitching, hand, Mrs. P. D. Stagg, Greensburg.	2 00
Second, Mrs. S. E. Hills, Delaware, Ohio	1 00
Drawn work, Mrs. Woodburn, Indianapolis	2 00
Second, Mrs. W. A. Wainwright, Noblesville	1 00
Drawn work, underwear, Mrs. Sophia Grove, Anderson.	2 00
Second, Mrs. Sophia Grove, Anderson	1 00
Infant's outfit, Maud F. Holloway, Knightstown	3 00
Second, Mrs. C. Dille, Greensburg	2 00
Pillow shams, embroidered, Mrs. Cal. Burns, Greensburg	2 00
Second, Mrs. E. B. Kirk, Shelbyville	1 00
Pillow shams, fancy, Mrs. E. H. Rous, Crawfordsville	2 00
Second, Mrs. M. A. Norwood, Indianapolis	1 00
Machinery embroidery, display by amateur, Mrs. B. S. Atkinson, Indianapolis.	3 00
Second, Mrs. E. B. Kirk, Shelbyville	2 00
Number of entries, 111.	

Committee—Miss Lulu Davidson, Crawfordsville; Maud F. Holloway, Knightstown.

CLASS L—Miscellaneous.

Wax flowers, Miss Sue Martin, Indianapolis	\$2 00
Second, Miss Sue Martin, Indianapolis	1 00
Wax fruit, Miss Sue Martin, Indianapolis	2 00
Second, Miss Sue Martin, Indianapolis	1 00
Wax work, Miss Sue Martin, Indianapolis	2 00
Handkerchief sachel, Miss C. de L. Thompson	1 50
Second, Miss Fannie McCormick, Indianapolis	1 00
Glove box, Mrs. Joe Scott, Crawfordsville	1 50
Second, Mrs. Retta Mathews, Arlington.	1 00
Broom holder, Miss Fannie McCormick, Indianapolis	1 50
Second, Miss Fannie McCormick, Indianapolis	1 00
Toilet cushion, not embroidered, Mrs. E. B. Kirk, Shelbyville	2 00
Second, Mrs. E. B. Kirk, Shelbyville	1 00
Sofa pillow, Mrs. J. Leibhardt, Knightstown	2 00
Second, Mrs. Sammons, Indianapolis	1 00
Toilet scarf, splasher and mats, Mrs. Sophia Grove, Anderson	2 00
Second, Mrs. R. H. Greble, Noblesville	1 00
Toilet cushion and bottles, Miss Fannie McCormick, Indianapolis	1 50
Second, Mrs. J. Leibhardt, Knightstown	1 00
Infants' nursery-basket, Mrs. Ollie Holloway, Knightstown	1 00
Tidy, not crochet, Mrs. J. H. Spence, Covington.	2 00
Second, Miss Jennie Means, Paris, Ills	1 00
Stuffed and mounted birds, Miss Laura Ingersoll, Indianapolis	7 00
Stuffed and mounted animals, Miss Laura E. Ingersoll, Indianapolis	7 00
Second, Mrs. Clara Drexler, Haughville.	3 00
Upholstery work, chair, Miss Minnie A. Coffin, Indianapolis	3 00
Rug, Mrs. C. Dille, Greensburg	2 00
Second, Mrs. W. A. Wainright, Noblesville	1 00
Fur rug, Mrs. A. M. Noe, Indianapolis.	3 00
Tea cosy, made up, Mrs. Sammons, Indianapolis	1 50
Second, Mrs. J. Call, Richmond	1 00
Lunch set, not embroidered, Mrs. J. H. Woodburn	2 00
Doyleys, not embroidered, Mrs. S. E. Hills, Delaware, O	2 00
Second, Miss Cora Bell, Indianapolis	1 00
Slumberine, Miss Fannie McCormick, Indianapolis	1 50
Second, Mrs. Sammons, Indianapolis.	1 00
Reticule, Miss Bessie Tomkins, Indianapolis	1 50
Second, Mrs. W. A. Moore, Indianapolis	1 00
Wall pocket, fancy, Miss Fannie McCormick, Indianapolis.	1 50
Second, Mrs. E. H. Rous, Crawfordsville	1 00
Fancy apron, Mrs. C. Dille, Greensburg	1 50
Second, Mrs. S. E. Hills, Delaware, O	1 00
Kitchen apron, Mrs. Sammons, Indianapolis	1 50
Second, Mrs. E. A. Parker, Indianapolis	1 00

Fancy sachets, Miss Margirente Hills, Delaware, O	\$1 50
Second, Mrs. J. E. Killen, Noblesville	1 00
Fancy sachels, Miss Margirente Hills, Delaware, Ohio	1 50
Second, Mrs. J. E. Killen, Noblesville	1 00
Drape or throw, Mrs. Jos. Lauer, Indianapolis	1 50
Second, Mrs. W. A. Moore, Indianapolis	1 00
Banners, not painted, Miss M. Weghorst, Indianapolis	3 00
Second, Mrs. S. E. Hills, Delaware, Ohio	2 00
Housewife, Mrs. P. D. Stagg, Greensburg	1 50
Second, Mrs. E. B. Kirk, Shelbyville	1 00
Photograph-holder, Mrs. W. C. Mason, Crawfordsville	1 50
Second, Miss Ella Wills, Lebanon	1 00
Laundry-bag, Miss Minnie Coffin	1 50
Second, Mrs. Sammons, Indianapolis	1 00
Darning-bag, Mrs. Sammons, Indianapolis	1 50
Second, Mrs. C. Dille, Greensburg	1 00
Paper ornaments, Mrs. W. L. Jukes, Indianapolis	1 50
Second, Miss E. H. Fairman, New York city	1 00
Number of entries, 392.	

Committee—Mrs. E. C. Nicholas and Mrs. Emma Coffman.

CLASS LI—Business Exhibits.

Display of millinery, Mrs. J. H. McKernan, Indianapolis	\$35 00
Second, Miss B. Samuels, Indianapolis	30 00
Dressmaking, Mrs. Peden, Anderson	20 00
Second, Mrs. West, Anderson	15 00
Hairwork display, Mrs. Fowler, Indianapolis	20 00
Kindergarten work, display, Miss Blaker, Indianapolis	25 00
Silk culture, Mrs. Catherine Mick, North Vernon	Worthy
Silk culture, Miss Neota Wilson, Russellville	Worthy
Portable karamic kiln, Mrs. D. W. Coffin, Indianapolis	Worthy
Number of entries, 13.	

Committee—Miss Lulu Davidson and Maud F. Holloway.

CLASS LII—Decorative Art Work.

Hammered or repousse work, Miss Carrie R. Morse, Indianapolis	\$2 00
Second, Mrs. C. S. Roney, Indianapolis	1 00
French decorative work, Mrs. Mabel Ennis, Indianapolis	1 50
Second, Mrs. Bertha Wade, Indianapolis	1 00
French decorative work, mineral, display, Mrs. Mabel Ennis	1 50
Second, Mrs. Bertha Wade, Indianapolis	1 00
Etching, display, Miss Rena Hill, Indianapolis	3 00
Second, Mrs. E. C. Winslow, Crawfordsville	2 00
Modeling in clay, Miss Retta Mathews, Indianapolis	3 00
Second, Mrs. A. E. Ferry, Indianapolis	2 00

PREMIUM AWARDS.

147

Wood carving, display, Mrs. Morris, Indianapolis	\$8 00
Second, Miss Retta Mathews, Indianapolis	5 00
Wood carving, specimen, Mrs. Morris, Indianapolis	3 00
Second, Miss Retta Mathews, Indianapolis	2 00
Display pottery painting, Limoges, Miss E. Heise, Indianapolis	3 00
Second, Miss Sussie M. Davis, Indianapolis	2 00
Specimen pottery painting, Miss E. Heise, Indianapolis	2 00
Second, Miss Cora M. Westfall, Terre Haute	1 00
Pottery painting, biscuit, display, Miss Cora Westfall, Terre Haute	3 00
Second, Mrs. A. E. Ferry, Indianapolis	2 00
Specimen pottery painting, Miss Cora Westfall, Terre Haute	2 00
Second, Miss Ada Commingor, Indianapolis	1 00
Painting on china, tableware, display, Mrs. D. W. Coffin, Indianapolis	5 00
Second, Mrs. A. E. Ferry, Indianapolis	3 00
Painting on china, tableware, specimen, Mrs. J. F. Julian, Indianapolis	3 00
Second, Mrs. D. W. Coffin, Indianapolis	2 00
Painting on china, ornamental pieces, Mrs. Jno. C. Walker, Indianapolis	3 00
Second, Mrs. A. E. Ferry, Indianapolis	2 00
Painting on china, Royal Worcester, Mrs. D. W. Coffin, Indianapolis	2 00
Painting on china, relief gold, Mrs. A. E. Ferry, Indianapolis	1 50
Platter, Japanese design, old blue, Mrs. A. E. Ferry, Indianapolis	1 50
Rose jar, Miss Ferry, Indianapolis	1 50
Painting on wood, Miss Julian, Indianapolis	3 00
Second, Miss Minnie Akass, Indianapolis	2 00
Painting on silk or satin, display, Miss Margriente Hill, Delaware, O	3 00
Second, Miss Rena Hill, Indianapolis	2 00
Painting on silk or satin, specimen, Mrs. D. W. Coffin, Indianapolis	1 50
Second, Miss Rena Hill, Indianapolis	1 00
Painting on colored velvet, specimen, Miss Ferry, Indianapolis	2 00
Second, Mrs. J. I. Julian, Indianapolis	1 00
Painting on velvet, white specimen, Mrs. Wm. W. Spencer, Indianapolis	2 00
Second, Mrs. Wm. W. Spencer, Indianapolis	1 00
Painting on velvet, Kensington, Mrs. Sophia Grove, Anderson	2 00
Second, Miss Nettie Wright, Indianapolis	1 00
Painting on bolting cloth, display, Miss Mattie Tuttle, Indianapolis	3 00
Second, Mrs. Julian, Indianapolis	2 00
Painting on bolting cloth, specimen, Miss Mattie Tuttle, Indianapolis	2 00
Second, Mrs. Julian, Indianapolis	1 00
Painting on celluloid, Mrs. W. L. Jukes, Indianapolis	1 50
Second, Miss Bessie Hendricks, Indianapolis	1 50
Painting on chamois skin, Mrs. Joseph Lauer, Indianapolis	1 50
Second, Mrs. C. de L. Thompson, St. Louis, Mo	1 00
Painting on matting, Mrs. L. H. Levey, Indianapolis	1 50
Second, Mrs. Sommers, Indianapolis	1 00
Tapestry painting, Miss A. E. Ferry, Indianapolis	2 00
Second, Miss A. E. Ferry, Indianapolis	1 00

Painted fan, Mrs. Miller, Rochester	\$1 50
Second, Mrs. A. E. Ferry, Indianapolis	1 00
Painted toilet set, Mrs. Silver, Crawfordsville	1 50
Printed fancy cards, display, Miss Bessie Hendricks, Indianapolis.	1 50
Second, Mrs. A. E. Ferry, Indianapolis.	1 00
Blotting pad, Miss Matthews, Indianapolis	1 50
Second, Miss Julia Conner, Indianapolis	1 00
Burnt poker work, Mrs. W. A. Wainwright, Noblesville	2 00
Painted fire screen, mounted, Mrs. D. W. Coffin, Indianapolis.	3 00
Second, Mrs. Julian, Indianapolis	2 00
Original design for decoration in oil, Mrs. A. E. Ferry, Indianapolis	3 00
Second, Miss Mary Y. Robinson, Indianapolis.	2 00
Drawing, original display, Miss Ada Comingor, Indianapolis.	3 00
Second, Miss Mary Y. Robinson, Indianapolis.	2 00
Drawings, original specimen, Miss Bessie Hendricks, Indianapolis.	2 00
Second, Miss Mary Y. Robinson, Indianapolis.	1 00
Drawing copy, display, Mrs. L. S. LaRue, Greensburg	3 00
Second, Miss J. Daggett, Indianapolis	2 00
Drawings copy, specimen, Mrs. L. S. LaRue, Greensburg	2 00
Second, Miss J. Daggett, Indianapolis	1 00
Figure drawn from life in twenty minutes, Miss Mary Y. Robinson, Indianapolis.	1 50
Fancy head, monochrome, Mrs. C. de L. Thompson, St. Louis, Mo	1 50
Pen and ink sketch, Miss Mary Y. Robinson, Indianapolis.	1 50
Second, Miss Mathews, Indianapolis	1 00
Frieze decoration, Miss Retta Mathews, Indianapolis	1 50
Painting on pair panels, Miss Rena Hill, Indianapolis.	3 00
Second, Miss C. de L. Thompson, St. Louis, Mo	2 00
Painting on pair panels, oil, Mrs. D. W. Coffin, Indianapolis	3 00
Second, Miss Julian, Indianapolis	2 00
Spring scene, oil, Miss Sue Ketcham, Indianapolis.	2 00
Second, Miss Lilla Willits, Indianapolis	1 00
Summer scene, oil, Miss Sue M. Ketcham, Indianapolis	2 00
Second, Mrs. Westfall, Terre Haute	1 00
Autumn scene, oil, Mrs. L. G. Annin, Indianapolis	2 00
Second, Miss Nettie Wright, Indianapolis	1 00
Winter scene, oil, Mrs. L. G. Annin, Indianapolis	2 00
Second, Mrs. W. J. Brown, Indianapolis	1 00
Marine scene, oil, Miss Sue M. Ketcham, Indianapolis.	2 00
Second, Miss A. E. Ferry, Indianapolis	1 00
Marine scene, water colors, Miss A. E. Ferry, Indianapolis.	2 00
Second, Miss Hill, Indianapolis	1 00
Interior scene, oil, Mrs. Ingraham, Indianapolis.	2 00
Second, Miss Retta Mathews, Indianapolis	1 00
Number of entries, 312.	

Committee—Mrs. Lou. M. Neely and Charlie Groves Hubbard.

CLASS LIII—Art Work—Amateur.

Crayon drawing, display, Miss Lillie F. Bals, Indianapolis.	\$3 00
Second, Miss Walton, Indianapolis.	2 00
Crayon landscape, Miss Lillie Willits, Indianapolis	2 00
Second, Miss Lillie Willits, Indianapolis	1 00
Pastelle painting, Miss Lillie Willits, Indianapolis	3 00
Second, Miss Westfall, Terre Haute	2 00
Painted plaques, display, Mrs. Julian, Indianapolis	3 00
Second, Mrs. Westfall, Terre Haute	2 00
Alabaster plaque, Mrs. Mattie Tuttle, Indianapolis	2 00
Second, Mrs. Julian, Indianapolis	1 00
Flower painting in oil, display, Mrs. C. L. Railsback, Indianapolis	3 00
Second, Miss Belle Morgan, Indianapolis	2 00
Flower painting in oil, specimen, Mrs. E. E. Freeman, Indianapolis. . . .	2 00
Second, Mrs. Chas. L. Railsback, Indianapolis	1 00
Flower painting in water colors, display, Miss Julia A. Conner, Indianapolis	3 00
Second, Miss Belle Morgan, Indianapolis	2 00
Flower painting, water colors, specimen, Miss Julia Conner, Indianapolis .	2 00
Second, Miss Belle Morgan, Indianapolis	1 00
Fruit painting in oil, Mrs. C. L. Railsback, Indianapolis.	3 00
Second, Mrs. L. H. Levey, Indianapolis	2 00
Landscape in oil, display, Mrs. C. L. Railsback, Indianapolis.	5 00
Second, Miss Nettie Wright, Indianapolis	3 00
Landscape in oil, specimen, Mrs. C. de L. Thompson, St. Louis, Mo	3 00
Second, Mrs. M. E. Purman, Indianapolis	2 00
Portrait in oil, Miss Belle Davis, St. Louis, Mo	5 00
Second, Miss Kate Woerner, Indianapolis	3 00
Sketch from nature in oil, Mrs. C. L. Railsback, Indianapolis	3 00
Second, Miss Julia Conner, Indianapolis	2 00
Study from still life, Mrs. C. L. Railsback, Indianapolis	3 00
Second, Miss Belle Morgan, Indianapolis.	2 00
Ideal head or figure, Mrs. J. A. Miller, Indianapolis	3 00
Second, Mrs. Westfall, Terre Haute	2 00
Animal painting, Minnie Akass, Indianapolis.	3 00
Second, Mrs. C. T. Curtin, Indianapolis	2 00
Number of entries, 166.	

Committee—Mrs. Lou. M. Neely and Charlie Groves Hubbard.

CLASS LIV—Professional Art Work.

Portraits in oil, Miss Sue M. Ketcham, Indianapolis.	\$10 00
Second, Miss Retta Mathews, Indianapolis	5 00
Portraits in oil, specimen, Miss Sue M. Ketcham, Indianapolis	5 00
Second, Miss Retta Mathews, Indianapolis	3 00
Portrait, water colors, Miss Ada Cominger, Indianapolis	3 00
Second, Miss Bessie Hendricks, Indianapolis	2 00
Portraits, crayon, Miss Retta Mathews, Indianapolis	3 00

Landscape in oil, display, Miss Sue M. Ketcham, Indianapolis	\$5 00
Second, Miss Lillian G. Annin, Indianapolis	3 00
Sketch from nature, Miss Sue M. Ketcham, Indianapolis	3 00
Second, Miss Retta Mathews, Indianapolis	2 00
Landscape in water colors, display, Miss Mary Y. Robinson, Indianapolis .	5 00
Second, Miss Bessie Hendricks, Indianapolis	3 00
Fruit or vegetable painting in oil, display, Miss Mary Y. Robinson, Indianapolis.	8 00
Second, Miss D. W. Coffin, Indianapolis	4 00
Specimen from nature in oil, Miss Sue M. Ketcham, Indianapolis	3 00
Second, Miss A. E. Ferry, Indianapolis	2 00
Flower painting in oil, display, Miss Mary Y. Robinson, Indianapolis. . .	5 00
Second, Miss A. E. Ferry, Indianapolis.	3 00
Flower painting in oil, specimen from nature, Miss Mary Y. Robinson, Indianapolis.	2 00
Second, Miss A. E. Ferry, Indianapolis.	1 00
Flower painting in water colors, display, Miss Mary Y. Robinson, Indianapolis.	5 00
Second, Miss Rena Hill, Indianapolis	3 00
Flower painting, water colors, specimen, Miss Sue M. Ketcham, Indianapolis.	3 00
Second, Miss Mary Y. Robinson, Indianapolis	2 00
Study from life, in oil, Miss Sue M. Ketcham, Indianapolis	5 00
Study from life, water colors, Miss Mary Y. Robinson, Indianapolis. . . .	5 00
Second, Miss Ada Comingor, Indianapolis	3 00
Drawing from life, Miss Sue Ketcham, Indianapolis	3 00
Second, Miss Mary Y. Robinson, Indianapolis	2 00
Pastelle painting, specimen, Miss Sue M. Ketcham, Indianapolis	3 00
Second, Miss A. E. Ferry, Indianapolis	2 00
Plaque, alabaster, Mrs. Ingraham, Indianapolis	2 00
Crayon drawing, specimen, Miss A. E. Ferry, Indianapolis	3 00
Second, Miss Retta Mathews, Indianapolis	2 00
Drawings from the antique, figure, Miss Mary Y. Robinson, Indianapolis .	2 00
Second, Miss Ada Comingor, Indianapolis	1 00
Drawings from the antique, head, Miss Retta Mathews, Indianapolis . . .	2 00
Second, Miss A. E. Ferry, Indianapolis	1 00
Study from still life, in oil, Miss A. E. Ferry, Indianapolis.	2 00
Second, Miss L. G. Annin, Indianapolis	1 00
Study from still life, water colors, Miss Mary Y. Robinson, Indianapolis. .	2 00
Second, Miss Bessie Hendricks, Indianapolis	1 00
Animal painting, Miss A. E. Ferry, Indianapolis	3 00
Second, Miss Julian, Indianapolis	2 00
Ideal figure or head, Miss A. E. Ferry, Indianapolis.	3 00
Second, Mrs. D. W. Coffin, Indianapolis	2 00

Number of entries, 121.

Committee—Mrs. Lou M. Nee'y and Charie Groves Hubbard.

CLASS LV—Table Luxuries.

Butter, 3 pounds, Mrs. Smock, Philadelphia.	\$2 00
Second, S. M. Patton, Howland	1 00
Honey, comb, 5 pounds, Mrs. J. C. Zimmerman, Wabash	2 00
Second, Mrs. Louisa C. Brown, Brightwood.	1 00
Honey, extracted, 5 pounds, Mrs. J. C. Zimmerman, Wabash	3 00
Second, Mrs. Annie Marvel Royalton	2 00
Bread, loaf, wheat, yeast, Mrs. Stoddard, Garfield Place	2 00
Second, Mrs. Hornady, Indianapolis.	1 00
Bread, wheat, salt-rising, Miss Harriet K. Fox, Indianapolis	2 00
Second, Miss Hedrick, Indianapolis	1 00
Graham bread, yeast, Miss Hedrick, Indianapolis	2 00
Second, Mrs. E. A. Parker, Indianapolis	1 00
Boston Brown Bread, Miss Allie Davidson, Muncie	2 00
Second, Miss E. Bryan, Indianapolis.	1 00
Dozen rolls, Mrs. J. H. Spence, Covington	2 00
Second, Mrs. Hornady, Indianapolis	1 00
Ginger bread, Mrs. George Rowland, Covington.	1 50
Second, Mrs. E. M. French, Indianapolis	1 00
Fig cake, Miss E. Bryan, Indianapolis	2 00
Layer cake, orange, Mrs. J. B. Powers, Indianapolis.	2 00
Second, Miss E. Bryan, Indianapolis.	1 00
Layer cake, cocoanut, Miss L. Canan, Indianapolis	2 00
Second, Miss M. Weghorst, Indianapolis	1 00
Angel Food, Mrs. F. T. Lee, Indianapolis.	2 00
Second, Miss Mary Porter, Indianapolis	1 00
Hickory nut cake, Miss E. Bryan, Indianapolis.	2 00
Second, Miss Allie Davidson, Muncie.	1 00
Imperial cake, Miss E. Bryan, Indianapolis	2 00
Fruit cake, Miss Gertie Darling, North Indianapolis	3 00
Second, Mrs. Sarah Hodson, Anderson	2 00
Pork cake, Mrs. S. A. Howard, Indianapolis	2 00
Second, Miss Allie Davidson, Muncie	1 00
White cake, Mrs. Sarah Hodson, Anderson	2 00
Second, Mrs. Smock, Philadelphia	1 00
Chocolate cake, layer, Miss L. Canan, Indianapolis	2 00
Second, Mrs. A. M. DeSouchet, Indianapolis	1 00
Chocolate cake, loaf, Miss Mary L. Fox, Indianapolis	2 00
Second, Mrs. Fred Knefler, Indianapolis	1 00
Crullers, Miss M. Weghorst, Indianapolis.	1 50
Second, Mrs. S. P. Stoddard, Indianapolis	1 00
Cream Puffs, Miss M. Weghorst, Indianapolis.	2 00
Second, Mrs. J. B. Powers, Indianapolis	1 00
Black pudding, Mrs. S. C. Hartzog, Frankfort.	1 50
Second, Miss Allie Davidson, Muncie	1 00

English plum pudding, Mrs. J. Miller, Edinburg	\$2 00
Second, Mrs. N. E. Fulton, Irvington	1 00
Collection jellies, Mrs. E. Speer, Greensburg	3 00
Second, Mrs. E. B. Hunt, Rising Sun	2 00
Preserves, collection, Mrs. E. Speer, Greensburg	5 00
Second, Mrs. E. B. Hunt, Rising Sun	3 00
Fruit butters, Mrs. Charles C. Hamilton, Greensburg	3 00
Second, Mrs. E. Speer, Greensburg	2 00
Canned fruit, Mrs. E. B. Hunt, Rising Sun	5 00
Second, Mrs. E. Speer, Greensburg	3 00
Salad, meat, Mrs. L. W. Louis, Indianapolis	1 50
Second, Mrs. N. E. Fulton, Irvington	1 00
Salad, fish, Mrs. A. M. DeSouchet, Indianapolis	1 50
Second, Mrs. T. L. Hale, Indianapolis	1 00
Salad, vegetable, Mrs. Fred Knefler, Indianapolis	1 50
Second, Mrs. C. C. Hamilton, Indianapolis	1 00
Cheese-straws, Mrs. Fred Knefler Indianapolis	1 50
Second, Mrs. J. H. Greenstreet, Indianapolis	1 00
Saratoga chips, Mrs. Elizabeth Lyon, Indianapolis	1 50
Second, Mrs. Fred. Knefler, Indianapolis	1 00
Boiled tongue, Mrs. Fred. Knefler	1 50
Second, Mrs. J. B. Powers, Indianapolis	1 00
Cooked ham, Mrs. J. B. Elam, Indianapolis	1 50
Second, Mrs. Lizzie Johnson, Indianapolis	1 00
Veal loaf, Mrs. Fred. Knefler, Indianapolis	1 50
Second, Mrs. Randall, Indianapolis	1 00
Beef Loaf, Mrs. J. B. Powers, Indianapolis	1 50
Second, Miss Allie Davidson, Muncie	1 00
Sweet pickles, collection, Mrs. S. A. Howard, Indianapolis	2 00
Second, Mrs. E. Speer, Greensburg	1 00
Mixed pickels, Mrs. S. A. Howard, Indianapolis	2 00
Second, Mrs. Smock, Philadelphia	1 00
Cucumber pickles, Mrs. E. B. Hunt, Rising Sun	2 00
Second, Mrs. J. A. McKinney, Indianapolis	1 00
Tomato catsup, Mrs. W. A. Wildbank, Indianapolis	1 50
Second, Miss Hedrick, Indianapolis	1 00
Cucumber catsup, Mrs. W. B. Flick, Lawrence	1 50
Second, Mrs. G. W. Sartor, Indianapolis	1 00
Chili sauce, Mrs. E. A. Parker, Indianapolis	1 50
Second, Mrs. W. B. Flick, Lawrence	1 00
Boston baked beans, Mrs. S. P. Stoddard, Indianapolis	1 50
Second, Mrs. Chas. C. Hamilton, Greensburg	1 00
Baked apples, Mrs. W. B. Flick, Lawrence	1 50
Second, Mrs. Blanch Burton	1 00
Cranberry sauce, Mrs. N. A. Ford, Indianapolis	1 50
Second, Mrs. Blanche Burton	1 00

PREMIUM AWARDS.

153

Gelatine dessert, Mrs. T. L. Hale, Indianapolis	\$1 50
Collection French candies, Miss F. V. Greenstreet, Indianapolis.	1 50
Second Mrs. E. A. Parker, Indianapolis	1 00
Collection taffy, Miss E. Bryan, Indianapolis	1 50
Second, Mrs. J. B. Powers, Indianapolis	1 00
Number of entries, 381.	

Committee—F. A. Shultz and R. C. McWilliams.

CLASS LVI—Women's Department.

Drawing, original, Herbert Wood, Indianapolis	\$1 50
Drawing, copy, Herbert Wood, Indianapolis	1 50
Crayon drawing, display, Herbert Wood, Indianapolis	2 00
Crayon drawing, specimen, Herbert Wood, Indianapolis	1 50
Kindergarten work, Indianapolis Free Kindergarten	1 00
Second, Indianapolis Free Kindergarten.	50
Number of entries, 8.	

Committee—Mrs. Lou. M. Neely and Charie Graves Hubbard.

CLASS LVII—Children's Department.

Loaf wheat bread, yeast, Miss M. R. Selman, Indianapolis	\$1 50
Second, Stella Sullivan, Indianapolis.	1 00
Third, Lena L. Ingraham, Indianapolis	50
Loaf wheat bread, salt rising, Fannie Hamilton, Greensburg	1 50
Second, Stella Sullivan, Indianapolis.	1 00
Third, Bertha Nassaman, Indianapolis	50
Salad, fish, Augusta Lyons, Indianapolis	1 50
Salad, vegetable, Bertha Nassaman, Indianapolis	1 50
Second, Fannie Hamilton, Greensburg	1 00
Sarrtoga chips, Miss Augusta Lyons, Indianapolis.	1 50
Second, Alice Randall, Indianapolis	1 00
Orange or lemon cake, Alice Randall, Indianapolis	1 50
Second, Minnie Akass, Indianapolis	1 00
Third, Bertha Nassaman, Indianapolis	50
Cocoanut cake, Ethel Smock, Philadelphia	1 50
Second, Gertie Williams, Muncie	1 00
Third, Stella Sullivan	50
Chocolate cake, Gertie Williams, Muncie.	1 50
Second, Bertha Nassaman, Indianapolis	1 00
Third, Ella Brison, Indianapolis.	50
Sponge cake, Augusta Lyon, Indianapolis	1 50
Second, Nellie Darling, North Indianapolis.	1 00
Third, Lena L. Ingraham, Indianapolis	50

Angel food, Ella Brison, Indianapolis	\$1 50
Second, Mary R. Selman, Indianapolis	1 00
Third, Lillian Hall, Indianapolis	50
Crullers, Ethal Smock, Indianapolis	1 50
Second, Miss Madge Myers, Frankfort	1 00
Jellies, collection, Minnie M. Miller, Edinburg	1 50
Second, Vine Brady, Lawrence.	1 00
Third, Mary Myers, Frankfort.	50
Pickles, mixed, Mary R. Sellman, Indianapolis	1 50
Second, Ella Brison, Indianapolis	1 00
Preserved collection, Minnie Miller, Edinburg.	2 00
Second, Vine Brady, Lawrence	1 00
Collection French candies, home made, Mary R. Sellman, Indianapolis	1 50
Second, Bertha Nassaman, Indianapolis	1 00
Collection taffy, Ella Brison, Indianapolis	1 50
Second, Bertha Nassaman, Indianapolis.	1 00
Garment, hand made, Maggie Cones, Mulberry	1 50
Second, Anna Rosensthal, Zionsville	1 00
Cotton embroidery, Nettie Grove, Anderson.	1 50
Second, Josie Jackson, Vevay	1 00
Embroidery, arasene specimen, Nettie Grove, Anderson	2 00
Second, Mary Myers, Frankfort	1 50
Third, Josie Jackson, Vevay	1 00
Embroidery, silk specimen, Ella Cole, Bennington	2 00
Second, Effie Harris, Marion	1 50
Third, Mamie Chesnut, Paris, Ill	1 00
Banners, Gertie Williams, Muncie	1 50
Second, Josie Jackson, Vevay	1 00
Third, Lulu Morrison, Rising Sun	50
Dressed doll and wardrobe, Mary Myers, Frankfort	1 50
Second, Mary Waldon, Covington	1 00
Crochet work, display, Josie Jackson, Vevay	1 50
Second, Lulu Morrison, Rising Sun	1 00
Crochet work, specimen, Bertha Nassaman, Indianapolis	1 00
Second, Josie Jackson, Vevay	50
Crochet shirt, Minnie Chesnut, Paris, Ill	1 50
Second, Mary Myers, Frankfort, Ill	1 00
Pair crochet mittens, Vine Brady, Lawrence	1 50
Second, Josie Jackson, Bennington.	1 00
Third, Etta Duncan, Covington	50
Tidy, Laura Hanna, Indianapolis	1 50
Second, Etta Duncan, Covington	1 00
Third, Lulu Morrison, Rising Sun	50
Pin cushion, Josie Jackson, Vevay	1 50
Second, Minnie Chesnut, Paris, Ill	1 00
Third, Lulu Morrison, Rising Sun	50

PREMIUM AWARDS.

155

Toilet set, Maggie Coubs, Mulberry	\$1 50
Second, Josie Jackson, Vevay	1 00
Third, Etta Duncan, Covington	50
Fancy sachets, Laura Coulon, Indianapolis	1 50
Second, Mary Myers, Frankfort	1 00
Throw or drape, Josie Jackson, Vevay	1 50
Second, Grace Prier, Indianapolis	1 00
Scrap-book, Bertha Nassaman, Indianapolis	1 50
Second, Vine Brady, Lawrence	1 00
Third, Faith Hamilton, Kingston	50
Painting on silk or satin, Fannie Hamilton, Greensburg	1 50
Second, Ella Brison, Indianapolis	1 00
Third, Josie Jackson, Vevay	50
Painting on wood, Grace Prier, Indianapolis	1 50
Second, Lena Ingraham, Indianapolis	1 00
Third, Nettie Grove, Anderson	50
Painted plaques, Georgia Trueblood, Indianapolis	1 50
Second, Etta Duncan, Covington.	1 00
Third, Georgia Trueblood, Indianapolis	50
Painting on bolting cloth, Effie Harris, Marion	1 50
Second, Nettie Grove, Anderson	1 00
Third, Vivian V. Losse, Indianapolis	50
Flower painting, Georgia Mooney, Columbus	1 50*
Second, Georgia Trueblood, Indianapolis	1 00
Third, Harry Crillman, Indianapolis.	50
Drawing, original, Miss Dinwiddie, Rockville.	1 50
Second, Lula Sater, Indianapolis.	1 00
Drawing copy, Miss Dinwiddie, first and second premiums	2 50
Fret sawing, Willie Hiller, Indianapolis	1 50
Woods, collection, Ray Scott, Indianapolis	1 50
Second, Gron Winn, Indianapolis	1 00
Shells, collection Ray Scott, Indianapolis	1 50
Second, Gron Winn, Indianapolis	1 00
Minerals, collection, Ray Scott, Indianapolis	3 00
Second, Gron Winn, Indianapolis	2 00
Collection of curiosities, Ray Scott, Indianapolis	2 00
Second, Gron Winn, Indianapolis	1 50
Collection of old coin, Ray Scott, Indianapolis	2 00
Second, Gron Winn, Indianapolis	1 00
Total number of entries, 333.	

Committee—Maud F. Holloway, Knightstown, and Mrs. Emma Coffman, Pendleton, Ind.

Comparative Statement of Entries.

DIVISION.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.
Live Stock	1,229	1,453	1,347	918	1,404	1,419	1,524	1,382	1,328
Agricultural	419	494	392	309	560	625	462	381	534
Horticultural, etc	169	291	260	94	116	159	143	130	134
Woman's Department	523	361	345	212	471	906	1,230	1,063	980
Total number of entries	2,340	2,599	2,344	1,633	2,551	3,109	3,359	2,966	2,976

DIVISION.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Live Stock	1,476	1,566	2,176	2,004	2,409	2,214	1,969	1,827
Agricultural	483	689	652	611	799	1,003	551	928
Horticultural, etc.	153	234	319	132	362	220	297	345
Woman's Department	1,081	1,223	1,500	1,752	1,449	1,902	2,391	2,747
Total number of entries	3,193	3,712	4,647	4,559	5,019	5,339	5,208	5,847

CLASSIFIED EXHIBITS.

[Where State is not given Indiana is implied.]

STEAM ENGINES.

Union Iron Works Co., Newark, Ohio, traction engine.
Robinson & Co. Machine Works, Richmond, traction engine, portable engine.
A. W. Stevens & Son, Auburn, N. Y., three engines.
Geiser Mfg. Co., Waynesboro, Pa., traction engine.
Nicholas & Shepherd Co., Battle Creek, Mich., traction engine.
Russell & Co., Massillon, Ohio, traction engine.
Minn. Thresher Mfg. Co., Stillwater, Minn., traction engine, plain engine.
Hay & Willits, Indianapolis, upright engines.
M. Rumley & Co., Laporte, traction engine,
Wilbert Blue, Montezuma, model engine, locomotive.
Howland & Johnson, Indianapolis, portable engine.
Clay Whitely, Indianapolis, one engine.
Eagle Machine Works, Indianapolis, traction and skid engines.
Advance Thresher Co., Battle Creek, Mich., engines.
P. F. Olds & Son, Lansing, Mich., gasoline engine.
Gaar, Scott & Co., Richmond, traction engine.
The Birdsall Co., Auburn, N. Y., traction engines.
The Huber Mfg. Co., Marion, Ohio, traction and portable engines.
Springfield Engine and Thrasher Co., - Springfield, Ohio, traction and stationary engines.

SAW MILLS.

C. and A. Potts & Co., Indianapolis, saw mills.
Eagle Machine Works, Indianapolis, saw mills.
The Birdsall Co., Auburn, N. Y., saw mills.
Russell and Co., Massillon, Ohio, the Boss Saw mills.

TILE MACHINERY.

Fate & Freese, Plymouth, Ohio, tile and brick machinery.

FORCE PUMPS.

E. K. Hays, Galva, Ill., force pumps.
Howe Pump & Engine Co., Indianapolis, iron force and lift pumps.
R. R. Rouse, Indianapolis, force pumps, all kinds.
F. E. Myers & Bro., Ashland, Ohio, force and lift pumps.
St. Joseph Pump Co., St. Joseph, Mo., water elevator and purifying pumps.
Lima Manufacturing Co., Lima, force pumps.

PRINTING, BOOK-BINDING, ETC.

Clark & Richard, city paper cutter and printer.
Wm. B. Burford, Indianapolis, book-binding and printing.

LAUNDRY, DAIRY MACHINES AND IMPLEMENTS.

Noah Evinger, Terre Haute, churn.
W. R. Fowler, Lafayette, polar creamery.

Florence Steam Washer Co., Indianapolis, steam washer.
 F. Clark, Brownsburg, Perfection washer and clothes line.
 J. S. Carey Works, Indianapolis, Bunse's Common Sense churn.
 Lebanon Manufacturing Co., Lebanon, Beck washing machine.
 C. Mears & Son, Bloomsburg, Penn., Perfect washer.
 A. Schlingman, West Alexander, Ohio, Climax washer.
 John S. Carter, Syracuse, N. Y., O. K. butter-making outfit.
 Mrs. Libbie S. Overman, Indianapolis, The Cyclone washer.
 H. P. Deuscher & Co., Hamilton, Ohio, The Favorite churn.
 Steel Pulley and Machine Works, Indianapolis, Cyclone churn.

DOMESTIC MACHINES AND IMPLEMENTS.

Reynolds Bros., Williamsburg, The Indiana hatcher.
 J. C. Wright, Cochran, vertical movable kitchen safe.
 Household Manufacturing Specialty Co., Cincinnati, Ohio, portable combined folding wire bracket shelf.
 Singer Sewing Machine Co., Indianapolis, art needle work.

HOUSE FURNISHING GOODS.

Albert Gall, Indianapolis, carpets, wall paper, lace curtains.
 A. B. Albert, Indianapolis, folding chairs.
 E. Ross & Co., Toledo, Ohio, rug machine.
 Mr. Parker, Indianapolis, house furnishing goods.
 W. H. Messenger, Indianapolis, house furnishing goods.

STOVES, RANGES, FURNACES, ETC.

George E. Freeney, Indianapolis, Garland stoves and ranges.
 Giles & Brown, Indianapolis, steam radiators and cook stoves combined.
 W. P. Maine, Indianapolis, stoves and shelf hardware.
 W. H. Messenger, Indianapolis, stoves and ranges.

Chicago Stove Works, Chicago, Ill., stoves and ranges.
 Wells Mfg. Co., Indianapolis, stoves and ranges.
 Knickerbocker Gas Regulator Co., Indianapolis, patent stove and grate valves.

SCALES, ETC.

Selby, Starr & Co., Peoria, Ill., Perfection weigher.
 Shannon & Buckley, Greensburg, Eccentric grain measurer and weigher.
 Nicholas & Shepherd Co., Battle Creek, Mich., grain weigher.
 Thompson Scale Co., Muncie, Daisy scales.

PLOWE, ALL KINDS.

Moline Plow Co., Moline, Ill., display plows.
 Kilbourne & Jacobs Mfg. Co., Columbus, Ohio, plows.
 Gale Mfg. Co., Albion, Mich., breaking, sulky and walking plows.
 Brown-Manly Plow Co., Malta, Ohio, four shovel and three walking plows.
 Geiser Mfg. Co., Waynesboro, Pa., steam plow.
 Kries Bros., Logansport, plows, all kinds.
 Bissell Chilled Plow works, South Bend, walking plows.
 Wier Plow Co., Monmouth, Ill., plows, all kinds.
 J. I. Case Plow Co., Racine, Wis., plows, all kinds.
 Oliver Chilled Plow Works, South Bend, chilled plows.
 South Bend Chilled Plow Co., South Bend, chilled plows.
 John Deere, Moline, Ill., plows.
 The Butcher & Gibbs Plow Co., Canton, Ohio, imperial plows.
 Brown Mfg. Co., Zanesville, Ohio, double and single shovel plows.
 Rock Island Plow Co., Rock Island, Ill., plows of all kinds.
 The Princess Plow Co., Canton, Ohio, plows.

CULTIVATORS, ETC.

Hunt & Adams, Indianapolis, cultivators.
 Brown-Manley Plow Co., Malta, Ohio, six cultivators.

Albion Mfg. Co., Albion, Mich., spring tooth cultivator.
 Rude Bros. Mfg. Co., Liberty, cultivators.
 Ohio Rake Co., Dayton, Ohio, cultivators.
 The Long & Alstatter Co., Hamilton, Ohio, cultivators.
 Newark Machine Co., Newark, Ohio, cultivators.
 Newark Machine Co., Newark, Ohio, manure spreaders.
 Geo. Prier, Indianapolis, cultivators.
 Hartman Mfg. Co., Vincennes, cultivators.
 H. P. Deuscher, Hamilton, Ohio, soil pulverizer.
 Superior Drill Co., Indianapolis, Superior cultivators.
 Patton, Stafford & Myers, Canastota, N. Y., field roller.
 Whitehall Cultivator Co., Covington, Whitehall cultivator.
 P. P. Mast & Co., Springfield, Ohio, Buckeye Sunbeam cultivators.
 Eureka Mower Co., Utica, N. Y., Eureka cultivators.
 Belle City Mfg. Co., Racine, Wis., combined cultivator and hiller.
 Brown Mfg. Co., Zanesville, Ohio, Brown cultivators.
 Fremont Cultivator Co., Bellevue, Ohio, Fremont sulky cultivators.
 Wier Plow Co., Monmouth, Ill., spring cultivators.
 The Monitor Harrow Co., Indianapolis, pulverizers.

HARROWS AND CORN PLANTERS.

A. W. Stevens & Son, Auburn, N. Y., harrow.
 Kreis Bros., Logansport, harrows.
 Leon O. Bailey, Indianapolis, two-horse corn planter.
 Ohio Rake Co., Dayton, Ohio, harrows and corn planters.
 Challenge Corn Planter Co., Grand Haven, Mich., corn planters.
 Keystone Mfg. Co., Sterling, Ill., corn planters and harrows.
 D. M. Osborn & Co., Auburn, N. Y., harrow.
 H. P. Deuscher, Hamilton, Ohio, corn planter and harrow.

Kimberlin Mfg. Co., Indianapolis, harrow and corn planter.
 Vandevier Corn Planter Co., Quincy, Ill., corn planters.
 A. W. Stevens & Son, Auburn, N. Y., spring tooth harrow.
 James Silby & Co., Peoria, Ill., Union corn planter.
 Deere & Mansur Co., Moline Ill., corn planters and disc harrows.
 P. P. Mast & Co., Springfield, Ohio, combined riding and walking cultivators.
 Eureka Mower Co., Utica, N. Y., Eureka spring tooth harrow.
 Wier Plow Co., Monmouth, Ill., bar, lever and reversible harrows.
 Haworth & Sons, Decatur Ill., corn planters.
 Kelley & Sons, Troy, Ohio, corn planters.
 D. E. McSheery & Co., Dayton, Ohio, rotary disc harrows.
 Avery Planter Co., Peoria, Ill., corn planters.
 The Monitor Harrow Co., Indianapolis, harrows.

DRILLS.

Patton, Stafford & Myer, Canastota, N. Y., rakes.
 Albion M'f'g Co., Albion, Mich., seeders and sulky hay rakes.
 Geo. Perie, Indianapolis star drills.
 D. E. McSherry & Co., Dayton, O., drills.
 H. P. Deuscher, Hamilton, O., corn drills.
 Superior Drill Co., Indianapolis, Superior grain drills.
 Hoosier Drill Co., Richmond, corn and wheat drills.
 Deen & Mansur Co., Moline, Ill., corn drills.
 Geo. W. Blue, Bunker Hill, spring grain drills.
 P. P. Mast & Co., Springfield, O., Buckeye grain drills.
 Star Drill Co., Rushville, Star grain drill.
 Evans M'f'g Co., Springfield, O., Evans corn drills.
 Rude Bros. M'f'g Co., Liberty, grain and fertilizer drills and corn drills.
 Wayne Works, Richmond, Champion grain drills.

CHECK ROWERS AND MARKERS.

E. K. Hayes, Galva, Ill., check-row planter.
 Rude Bros.' M'f'g Co., Liberty, wheat and corn drills.
 Challenge Corn Planter Co., Grand Haven, Mich., check rowers.
 H. P. Deuscher, Hamilton, O., check rowers.
 Kimberlin M'f'g Co., Indianapolis, check rower.
 Vandevier Corn Planter Co., Quincy, Ill., check rowers.
 Chicago Feed Mill Co., Chicago, Ill., broadcast seeder.
 James Silby & Co., Peoria, Ill., Union check rower.
 Deen & Mansur Co., Moline, Ill., check rower.
 S. Freeman & Sons M'f'g Co., Racine, Wis., broad-cast sower.
 Kelley & Sons, Troy, O., check rowers.
 Avery Planter Co., Peoria, Ill., check rower.

HAY RAKES.

Patton, Stafford & Myer, Canastota, N. Y., New York Champion hay rakes.
 Rude Bros. M'f'g Co., Liberty, hay rakes.
 Ohio Rake Co., Dayton, O., hay rakes.
 The Long & Alstatter Co., Hamilton, O., hay rakes.
 Keystone M'f'g Co., Sterling, Ill., hay rakes and hay loaders.
 Thomas M'f'g Co., Springfield, O., hay rakes.
 A. W. Stevens & Son, Auburn, N. Y., Steel King hay rake.
 Kimberlin M'f'g Co., Indianapolis, Bonanza hay rake.
 Hoosier Drill Co., Richmond, Hoosier hay rake.
 Albion M'f'g Co., Albion, Mich., Giant Daisy horse hay rake.
 Sterling M'f'g Co., Sterling, Ill., Sterling sulky rake.
 Deere & Mansur Co., Moline, Ill., Deere sulky rake.
 P. P. Mast & Co., Springfield, O., Buckeye hay rake.

TEDDERS.

Thomas M'f'g Co., Springfield, O., hay tedders.

Sterling M'f'g Co., Sterling, Ill., Sterling hay tedder.

HARVESTERS AND BINDERS.

McCormick Harvesting Machine Co., Chicago, Ills., harvesting machines.
 Peerless Reaper Co., Indianapolis, binder, reaper, mower.
 D. M. Osborn & Co., Auburn, N. Y., harvester and binder, reaper, mowers.
 H. L. Miller, Peoria, Ills., mowers.
 Clay Whitely, Indianapolis, binder and mower.
 Milwaukee Harvesting Co., Milwaukee, Wis., harvesters, binders and mowers.
 Thomas Manufacturing Co., Springfield, O., lawn mowers.
 C. H. Cannon, Indianapolis, binders and mowers.
 Davis Platform Binder Co., Cleveland, O., binders and mowers.
 H. J. Prier, Indianapolis, binders and mowers.
 D. S. Morgan & Co., Rockport, N. Y., mowers, reapers and binders.
 R. Gregg, Aurora, hay-cock drag, rick-ing derrick, cocking-sled, hay bed.
 Walter A. Wood, Chicago, Ills., harvesters and binders.
 Esterly Harvesting Machine Co., Whitewater, Wis., harvesters and binders.
 F. E. Myers & Bro., Ashland, O., hay carriers.
 Eureka Mower Co., Utica, N. Y., Eureka mower.
 Wm. Deering & Co., Chicago, Ills., reapers and binders.
 Plano Manufacturing Co., Chicago, Ills., binders, reapers and mowers.
 Aultman, Miller & Co., Akron, O., binders and mowers.
 Hoover & Gamble, Miamisburg, O., Excelsior binders and mowers.
 Winchester & Partridge Manufacturing Co., Whitewater, Wis., mowers.
 J. F. Seiberling & Co., Akron, O., Empire mowers, reapers and binders.

THRESHERS.

Robinson & Co. Machine Works, Richmond, Ind., thresher and straw stacker.
 A. W. Stevens & Son, Auburn, N. Y., thresher.
 Geiser Manufacturing Co., Waynesboro, Pa., thresher.

Russell & Co., Massillon, O., separator and straw stacker.
 Minnesota Thresher Manufacturing Co., Stillwater, Minn., separator.
 M. Rumley & Co., Laporte, separator.
 Newark Machine Co., Newark, O., clover hullers, straw stackers.
 Nicholas & Shepherd Co., Battle Creek, Mich., separators.
 Hasselman & Co., Indianapolis, threshers.
 Eagle Machine Works, Indianapolis, threshers and straw stackers.
 Advance Thresher Co., Battle Creek, Mich., threshers.
 Gaar, Scott & Co., Richmond, clover huller and stacker.
 The Birdsall Manufacturing Co., Auburn, N. Y., Cayuga Chief separators.
 Reeves & Co., Columbus, straw stackers.
 The Huber Manufacturing Co., Marion, O., separators.
 Newark Machine Co., Columbus, O., separators and straw stackers.
 Springfield Engine and Thresher Co., Springfield, O., threshers.

FEED MILLS.

E. F. Michael & Co., Laporte, improved fanning mill.
 P. P. Mast & Co., Springfield, Ohio, cider mills.
 Winchester & Partridge Manufacturing Co., Whitewater, Wis., feed mills.
 Bradley, Holton & Co., Indianapolis, ensilage and fodder cutters.
 Hocking Valley Manufacturing Co., Lancaster, Ohio, feed cutters and corn shellers.
 Robinson & Co. Machine Works, Richmond, feed mills.
 A. W. Stevens & Son, Auburn, N. Y., corn crusher and mill.
 Staver Manufacturing Co., Freeport, Ill., feed mills, cutters and corn shellers.
 H. T. Conde Implement Co., Indianapolis, feed cutters, etc.
 Kreis Bros., Logansport, feed cutters.
 Waldron & Sprout, Muncy, Pa., feed mills, corn crushers.
 Ohio Bake Co., Dayton, Ohio, corn shellers.
 The Long & Alstatter Co., Hamilton, Ohio, cutting boxes.
 Newark Machine Co., Newark, Ohio, fanning mills, cutting boxes, corn-shell-ers.

11—AGE.

W. R. Harrison & Co., Canton, Ohio, feed and ensilage cutters.
 Eagle Machine Co., Lancaster, Ohio, feed cutters, ensilage cutters, corn shellers.
 Keystone Manufacturing Co., Sterling, Ill., corn shellers.
 Star Manufacturing Co., New Lexington, Ohio, Star feed mills.
 J. A. Field & Co., St. Louis, Mo., Giant feed mills.
 Valley Iron Manufacturing Co., Appleton, Wis., feed mills, feed cutters and corn shellers.
 H. L. Miller, Peoria, Ill., feed mill.
 Howland & Johnson, Indianapolis, feed mills.
 S. Freeman & Sons, Racine, Wis., feed cutters and power carrier, farm and warehouse fanning mills.
 Wayne Works, Richmond, cutting boxes.
 N. P. Bowsher, South Bend, feed grinding mills.
 Nesom & Poindexter, Indianapolis, Dexter corn splitter and steam boiler.
 F. C. Austin Manufacturing Co., Chicago, Ill., feed cutters and steam generators.
 Reynolds, Frazer & Co., Elwood, trio feed mill.
 Bovee Harvesting Machine Co., Tama, Iowa, Great Western feed steamer and tank heater.
 Springfield Engine and Thrasher Co., Kelly duplex feed mills.
 H. C. Staver Manufacturing Co., Chicago, Ill., Buckeye feed grinders, corn shellers, feed cutters.
 Chicago Feed Mill Co., Chicago, Ill., Victor feed mills.
 Foos Manufacturing Co., Springfield, Ohio, grinding mills.
 Sterling Manufacturing Co., Sterling, Ill., corn and cob mill.
 Belle City Manufacturing Co., Racine, Wis., fodder and ensilage cutters.
 Appleton Manufacturing Co., Appleton, Wis., feed mills and crushers.
 E. F. Michael & Co., Laporte, improved fanning mill.

MILLS AND PRESSES.

Keystone Manufacturing Co., Sterling, Ill., cider mills.
 E. Albert & Son, Indianapolis, hay press.

P. K. Dedrick & Co., Albany, N. Y.,
baling press.
Kansas City Hay Press Co., Kansas City,
Mo., The Lightning hay press.
Superior Drill Co., Indianapolis, cider
mills.
Flint & Walling Manufacturing Co.,
Kendallville, Hoosier oscillating hay
press.

CUTTERS.

A. N. Hadley, Indianapolis, Hadley
corn harvester.
Keystone Manufacturing Co., Sterling,
Ill., corn husker and fodder cutter.
Deere & Mansur Co., Moline, Ill., stalk
cutters.
Delaware Corn Harvester Co., Delaware,
Ohio, corn harvesters.
Avery Planter Co., Peoria, Ill., stalk
cutters.
The Long & Alstatter Co., Hamilton,
Ohio, fodder cutters.

FENCES AND FENCE MACHINERY.

L. C. Lowden, Indianapolis, wire picket
field fence machine.
W. H. Sheffield, Zionsville, farm fence.
S. B. Roe, South Bend, fence machine.
Chas. Bailey, Ben Davis, fence.
Power Fence Loom Co., Greenfield,
power fence loom.
O. D. Reeves & Co., Richmond, portable
fence loom.
Elliott Reed & Co., Richmond, Ind.,
power fence machine.
Cleveland Fence Co., Indianapolis, yard
and farm fences.
Climax Fence Machine Co., Columbus,
Ohio, fence machine.
A. C. Covell, Charlotte, Mich., portable
farm gate and fence.
Rate's Metallic Picket Fence Co., Lib-
erty, wire slat fence machine.
Hannaka Fence Co., Indianapolis, iron
fences.
Ellis & Helfinberger, Indianapolis, wire
fences.
Empire Machine Co., Richmond, fence
machine.
F. Bremerman, Indianapolis, ground
picket and wire fence.
Orlando Mosely, Peru, Excelsior fence
machine.

Nicolai Bros., Syracuse, Victor fence
machine.
Indianapolis Fence Co., Indianapolis,
yard and farm fences.
W. B. Seward, Indianapolis, Seward's
improved iron fence.
C. F. Darnell, Indianapolis, farm and
yard fence.

WIND ENGINES.

W. J. Beach, Valparaiso, wind mill and
pump.
Stover Manufacturing Co., Freeport, Ill.,
wind mill.
Howe Pump and Engine Co., Indianap-
olis, wind mills.
Perkins Wind Mill and Axe Co., Mish-
awaka, wind mills.
Zimmerman Manufacturing Co., Au-
burn, wind engine.
The Airmotor Co., Chicago, Ill., wind
mill.
Steel Pulley and Machine Works, Indi-
anapolis, National wind engine.
Monitor Manufacturing Co., Auburn,
Monitor wind engine.
Barlow & Youmans, Galesburg, Mich.,
Strait wind mill.
Lima Manufacturing Co., Lima, Queen
wind mill.
Flint-Walling Manufacturing Co., Ken-
dallville, Star wind engine.
Winchester & Partridge Manufacturing
Co., Whitewater, Wis., Tuckwood
wind mill.

AUTOMATIC GATE.

T. La Doup, Columbus, automatic road
gate.
S. B. O'Dell, Shelburn, carriage gate.
R. T. Cook, Noblesville, automatic gate.
Powell & Decrow, Newark, O., truss
eccentric farm gate.
C. P. Lancaster & Bro., Fairmount,
hingeless balanced gate.

WAGONS.

Hunt & Adams, Indianapolis, farm
wagon.
Racine Bolster Spring Co., Racine, Wis.,
bolster spring.
A. A. Helfrich, Indianapolis, dump
wagons.

Wm. Nickum, Indianapolis, display wagon.
 Studebaker Bros., South Bend, farm wagons.
 Brown M'fg Co., Zanesville, O., Brown farm wagons.
 Winchester & Partridge M'fg Co., Whitewater, Wis., wagons.
 J. S. Hiatt, Winchester, gas pipe whiffle-tree.

ROAD MAKING MACHINERY.

Hunt & Adams, Indianapolis, American road machine.
 Slusset-McLean Scraper Co., Sidney, O., scrapers and scoops.
 Kilbourne & Jacobs M'fg Co., Columbus, O., scrapers and scoops.
 American Steel Scraper Co., Sidney, O., scrapers and scoops.
 F. C. Austin M'fg Co., Chicago, Ill., road machines, scrapers and plows.
 Peter Raab, Dumont, road scraper.
 Western Wheel Scraper Co., Mt. Pleasant, Iowa, Western Reversible scraper.

CARRIAGES AND BUGGIES.

Hamilton Buggy Co., Hamilton, Ohio, seven buggies and carriages.
 Abbott Buggy Co., Chicago, Ill., six carriages and buggies.
 Anchor Buggy Co., Cincinnati, Ohio, buggies and carriages.
 Connersville Buggy Co., Connersville, buggies and carriages.
 Michigan Buggy Co., Kalamazoo, Mich., buggies and carriages.
 G. H. Shover, Indianapolis, buggies and carriages.
 Lane Mfg. Co., Kalamazoo, Mich., buggies and sleighs.
 McFarlan Carriage Co., Connersville, carriages and buggies.
 L. Bimel & Son, St. Marys, Ohio, carriages and buggies.
 Spiral Spring Buggy Co., Grand Rapids, Mich., carriages and buggies.
 Troy Buggy Works, Troy, Ohio, buggies and carriages.
 Bradley, Holten & Co., Indianapolis, buggies and carriages.
 Enterprise Carriage Co., Cincinnati, Ohio, buggies and carriages.
 Kaufman Buggy Co., Miamisburg, Ohio, buggies and carriages.

R. Silver, Indianapolis, buggies and carriages.
 Birdsell Mfg. Co., South Bend, carriages and buggies.
 Lindsay Planter Co., Lafayette, road carts.
 Columbus Buggy Co., Columbus, Ohio, buggies and carriages.
 G. W. Lutz & Co., Indianapolis, road carts, trotting and speed wagons.
 C. H. Black Mfg. Co., Indianapolis, carriages, phaetons, buggies.
 Irvin Robbins, Indianapolis, carriages and buggies.
 Kalamazoo Wagon Co., Kalamazoo, Mich., carriages and buggies.
 Sayers & Scoville, Cincinnati, carriages and buggies.
 C. E. Kregelo, Indianapolis, funeral cars.
 Keystone Mfg. Co., Sterling, Ill., road carts.
 Creamer & Scott Co., Indianapolis, carriages and road carts.
 Hiram W. Davis & Co., Cincinnati, Ohio, carriages and buggies.
 Columbus Cart Co., Columbus, Ohio, road carts.
 Wayne Works, Richmond, road carts, Fostoria Buggy Co., Fostoria, Ohio, buggies and carriages.
 Studebaker Bros., South Bend, buggies and carriages.
 D. G. Wyeth, Newark, Ohio, buggies and road wagons.

FURNITURE.

E. D. Braden, Indianapolis, Courtland wall desks.
 Japanese Furniture Mfg. Co., bamboo screens, tables, music cases, divans, etc.

PIANOS.

R. E. Stephens, Indianapolis, Æolian organ and Æolian cabinet.
 D. H. Balwin, Indianapolis, pianos and organs.
 Bryant & Dierdorf, Indianapolis, piano.

CLOTHING.

Model Clothing Co., Indianapolis.
 When Clothing Co., Indianapolis.
 H. S. Tucker, Indianapolis, Foster kid glove.

NEWSPAPERS.

Western Rural Stockman, Indianapolis.
 Indiana Farmer, Indianapolis.
 Prairie Farmer, Chicago, Ill.
 Farmer's Review, Chicago, Ill.
 Farmer's Advance, Chicago, Ill.

MISCELLANEOUS.

Mrs. A. G. Selman, Indianapolis, botanical specimens.
 Mrs. W. A. Moore, Indianapolis, botanical specimens.
 W. A. Ford, Indianapolis, American ventilator.
 Simon Humfield, Jr., Cochran, Wright's patent safe.
 A. J. Munson, Indianapolis, lightning rods and house ornamentations.
 Indiana Electrical Service Co., Indianapolis electrical apparatus for temperature regulation.
 Olinger & Youtz, Indianapolis, tomb stones and monuments.
 A. W. Morgan & Son, Indianapolis, well augur and earth elevator.
 Hay & Willis, Indianapolis, pulleys.
 Chicago Art Glass Co., Chicago, Ill., stained and art glass.
 Geo. J. Mayer, Indianapolis, seals, stencils and stamps.
 James N. Mayhew, Indianapolis, electrical apparatus.
 Reeves Pulley Co., Columbus, wood split pulleys.
 Weathers & Armstrong, Indianapolis, lifting jack and sash balance.
 Mathews Medicine Co., Indianapolis, patent medicine.
 G. S. Mills, Oxford, adding machine.
 Indianapolis District Telegraph Co., electric bells.
 Electric gas lighting, burglar alarms, electric supplies.
 W. H. Dye, Philadelphia, carp, bass, and blue catfish.
 A. B. Albert, Indianapolis, folding chair.
 The National Sheet Metal Roofing Co., New York City, metallic shingles and roofing.
 Hart Weigher Co., Peoria, Ill., Telescope grain weigher.

Brooks Oil Co., Indianapolis, oil exhibit.
 Shannon & Beekley, Greensburg, grain measure.

John McHale & Co., Brazil, hydro-carbon generator.

Giles & Brown, Indianapolis, Mackey portable radiator.

W. W. Barnum, Indianapolis, automatic folding mosquito canopy.

The Akron Reed & Rallan Co., Akron, O., baby carriages and cabs.

Indianapolis Free Kindergarten and Children's Aid Society, exhibit of work.

Mrs. S. J. Finley, Indianapolis, millinery and notions.

Pang Yinn, Indianapolis, fancy goods.

Edward E. Paddock, Indianapolis, modeling in clay.

J. H. Clark, Indianapolis, photographs.

Madame Kellogg, Battle Creek, Mich., French system dress cutting.

Mrs. M. J. Rhoads, Indianapolis, artificial flowers.

Mrs. McKiernan, Indianapolis, millinery.

Family Dress Guide Co., Indianapolis, dress guide of drafting and cutting.

Hunter Brothers, Indianapolis, pictures, picture frames, artist materials.

Chas. Mayer, Indianapolis, toys and fancy goods.

Pugh & Thompson, Indianapolis, pillow sham adjuster.

Flanner & Buchanan, Indianapolis, undertaker's goods.

Ray Manon, Indianapolis, music racks, hat racks, bracket shelves.

National Business College, Indianapolis, short-hand, type-writing, etc.

Indianapolis Business University, Indianapolis, book-keeping, short-hand, type-writing.

New York Steam Dental Co., Indianapolis, dental supply exhibit.

Geo. J. Mayer, Indianapolis, seals, stencils, rubber stamps, steel stamps.

J. P. Perkins & Co., Indianapolis, Miller Patent Barrel Truck and Support.

G. L. Markley, Crawfordsville, case of horse shoes and nails.

James Weathers, Indianapolis, Little Giant Lifting Jack sash balance.

J. F. Wynkook, Indianapolis, O. K. adjustable ironing table.

Mathews Medicine Co., Indianapolis, Peruvian celery, Peruvian beans.

G. H. Grim, Manufacturing Co., Hudson, O., Champion evaporator.
 The Sherwin-Williams Paint Co., Chicago, Ill., paints.
 J. A. Everett & Co., Indianapolis, seeds of all kinds.
 Enterprise Manufacturing Co., Columbiana, O., tile ditching machine.
 Wm. G. Reed, Avon, device for suspending hogs.
 Flint & Walling Manufacturing Co., Kendallville, Hoosier Automatic well machine.
 Lister's Agricultural Chemical Works, Newark, N. J., Lister's animal bone fertilizer.
 Deere & Mansur Co., Moline, Ill., potato digger.
 John S. Reese & Co., Baltimore, Md., fertilizers.
 Currie Fertilizer Co., Louisville, Ky., fertilizers.

F. C. Huntington & Co., Indianapolis, farm and garden seeds.
 E. Rauh & Sons, Indianapolis, fertilizers.
 Flint & Walling Manufacturing Co., Kendallville, well machine.
 G. V. Phelps, Newark, O., emery saw gummer.
 Imperial Nurseries, Columbus, fruit trees of all kinds.
 Springfield Fertilizer Co., Springfield, O., Standard fertilizers.
 The Cincinnati Desiccating Co., Cincinnati, O., fertilizers.
 William Moore, Kokomo, natural gas separators.
 Weathers & Armstrong, Indianapolis, combination anvil, vise and drill.
 Valentine Folard, Indianapolis, traversing machine.
 Hay & Willits, Indianapolis, bicycles and safeties.

COMMERCIAL FERTILIZERS.

H. A. HUSTON, STATE CHEMIST, LAFAYETTE, IND.

During the year 1889, the sales of commercial fertilizers in the State nearly doubled, as compared with those of 1888. The total amount sold in 1889 is estimated at 19,350 tons, and its commercial value at \$600,000. About one-third of the material sold was ground bone, and the basis of many brands was also bone. Last year attention was called to an increase in the use of potash, and this increase continued during 1889. In 1884 only 32 per cent. of the brands on the market contained potash, while in 1889, 72 out of 113, or 64 per cent., contained potash. Still, the total amount of potash sold was only 210 tons or $\frac{1}{50}$ of that removed in grain crops (straw not included). It is only a little over $\frac{1}{2}$ what the farmers haul to the Indiana paper mills in straw, or $\frac{1}{18}$ of what is exported from the State in wheat alone. Of nitrogen there were 539 tons sold, or $\frac{1}{15}$ of that removed in grain crops. Of phosphoric acid there was a total of 2,945 tons sold, of which 1,600 tons were available at once for plant food. The total amount is $\frac{1}{2}$ of that removed in grain crops. Of the total amount of fertilizer sold, about $\frac{1}{3}$ (3,000 tons) was manufactured in the State.

It is a genuine cause for alarm to see the relation between the amount of plant food exported in grain (including corn) and the amount returned to the soil in fertilizers. As stated above, about \$600,000 worth was returned to the soil in commercial fertilizers, while the value of the plant food exported annually from the State is certainly not less than \$30,000,000. This simply means that the farmers are selling their farms, and, only too soon, will find that what remains is in such a condition that it will no longer yield profitable crops, under the present system of agriculture. This matter will be treated more fully in a bulletin on "Soils of Indiana," now in preparation.

EXPLANATION OF THE TABLES.

These contain the analyses of all goods legally on the Indiana market during the past year. The samples numbered from 289 to 381 were analyzed during the year, while those from 102 to 288 were analyzed in previous years. The tables contain an "estimated value per ton." It is important to note what is intended by this. No attempt is made to state the agricultural value of the fertilizer, or the return which a farmer may expect from a given quantity of any sample. This agricultural value would depend on many varying conditions, such as the crop to be raised, the composition of the soil, the condition of the soil at the time of applying the fertilizer, the time of application, the amount of rainfall, the drainage, the care taken of the crop, and other conditions.

The "estimated value per ton" is intended to mean the *commercial* value, that is, the sum for which a ton of the sample could be made and put upon the market. The figures are only approximate, and are probably rather above the selling price of the goods. In computing these valuations the following values were given to the various ingredients:

Soluble Phosphoric Acid	8½c. per pound.
Reverted " "	8½c. " "
Insoluble " "	4c. " "
Ammonia	18c. " "
Potassium Oxide	6½c. " "

These valuations are useful to the farmer in deciding between different samples of goods offered to him.
In order to find the estimated value per ton the following simple rules may be observed:

Multiply \$1.70 by the per cent. of soluble phosphoric acid					
"	1.70	"	"	reverted	" "
"	.80	"	"	insoluble	" "
"	3.60	"	"	ammonia.	
"	1.30	"	"	potash.	

Add together the numbers so obtained and the sum is the estimated commercial value of a ton of the goods. For example, the tag shows that the fertilizer contains:

Soluble Phosphoric Acid	2.70%
Reverted " "	5.37%
Insoluble " "	2.66%
Ammonia	3.76%
Potash	2.46%
\$1.70×2.70	\$4.59
1.70×5.37	9.13
.80×2.66	2.13
3.60×3.76	13.53
1.30×2.46	3.20
Estimated value per ton	\$32.58

In purchasing fertilizers the farmer should keep in mind the crop to be raised and the kind of land on which it is to be grown. If the crop is one requiring a large amount of potash, as the tobacco crop, then goods should be selected containing a large amount of this ingredient. If his land contained a fair amount of phosphoric acid, little or no benefit could be expected from the application of a fertilizer containing much phosphoric acid and a small amount of ammonia and potash. The investigation of the needs of a given soil can only be made by experiment, and the Station is prepared to give directions for such experiments to those who desire it.

Farmers are advised to buy only such goods as bear the State Chemist's analysis. Persons selling goods that are not so labeled are committing an offence against the laws of the State. The label indicates that the manufacturer has made an affidavit that the goods are as represented.

Experience in other States has shown that the reputable manufacturers and dealers are willing to conform to the laws, and that when goods are offered for sale without the official or legal label they are of an inferior quality. It is generally those who offer adulterated goods who do not wish the quality of their goods to be known.

It may be well to state here that the names of commercial fertilizers are not always a sure guide to their composition or quality. A poor grade of fertilizer may have a very big name. The State Chemist is not responsible for these names. The manufacturer makes an affidavit that he will sell certain goods under such a name, and the name thus becomes a part of the official record. Take for example the case of raw bone meal. A good quality of bone meal ought to contain at least 20 per cent. of phosphoric acid and $4\frac{1}{2}$ per cent. of ammonia. Many samples run much higher than this. If the bone has been steamed, it should contain not less than 25 per cent. of phosphoric acid and 2 per cent. of ammonia. If the tag of the State Chemist shows that the goods fall below these standards to any marked degree, it means that there is something beside bone present, and the words "pure," and such terms, are incorrectly applied. These standards do not apply to "dissolved bone." Buyers should depend on the State Chemist's analysis as shown on the tag and not on high sounding names.

Most manufacturers print "guaranteed analysis" on their sacks. Some of these are in reasonable form, and some are most absurd and liable to mislead. The term "available phosphoric acid," frequently appears in these. The available phosphoric acid is the sum of the soluble and reverted phosphoric acid on the tag. Many of these "guaranteed analysis" have too wide limits. Thus we sometimes see them reading, "available phos. acid 8 to 12 per cent." Now this merely means that the maker states that there is 8 per cent. or more present, and in estimating values from such statement, figure only on the lower number. In all cases it is better to make the calculations from the official tag, as that shows the result of an actual analysis, backed up by an affidavit. If there are no official tags on the goods don't buy them unless you want to be cheated or to help the dealer commit a crime.

The State law relating to fertilizers was published in full in last year's report.

TABLE I—Continued.

Number.	NAME OF FERTILIZER.	MANUFACTURER.	Per Cent. Solu- ble Phosphate Acid.	Per Cent. Re- verted Phos- phoric Acid.	Per Cent. Insol- uble Phos- phoric Acid.	Per Cent. Total Phosphate Acid.	Per Cent. of Am- monia.	Per Cent. of Pot- ash	Estimated Value per Ton.	Number.
370	Buffalo Guano.	Millsom Read, & Fert. Co., E. Buffalo, N. Y.	1.90	4.32	4.45	10.67	2.01	3.11	33.45	370
371	World of Good Raw Bone Superphosphate	Thompson & Edwards Fert. Co., Chicago, Ill.	5.73	4.74	3.04	13.51	2.33	3.36	34.23	371
372	Chicago Bone Meal, Pig's Foot Brand.	Thompson & Edwards Fert. Co., Chicago, Ill.	0.00	3.77	12.59	16.26	4.83	1.79	36.20	372
373	Pure Raw Bone	Thompson & Edwards Fert. Co., Chicago, Ill.	0.63	3.63	16.43	20.42	3.66	0.00	40.26	373
374	Raw Bone	Loudenback Fertilizer Co., Urbana, O.	0.70	3.29	15.02	19.01	3.50	.91	32.57	374
375	Pure Bone Meal.	Loudenback Fertilizer Co., Urbana, O.	0.00	3.66	10.96	16.61	1.46	4.17	29.05	375
376	Improved Superphosphate	L. P. Thomas & Son Co., Philadelphia, Pa.	8.84	3.47	3.13	15.44	0.43	0.00	24.97	376
377	Pure Ground Bone	L. P. Thomas & Son Co., Philadelphia, Pa.	0.00	4.25	18.95	22.90	4.29	0.00	37.58	377
378	Philadelphia Standard Phosphate		8.76	2.79	0.32	11.37	0.00	0.00	19.39	378
379	Bone and Potash		8.48	3.21	1.70	13.39	0.10	1.49	28.52	379
380	Pure Raw Bone, Ground		0.00	4.40	18.37	22.77	5.45	0.00	41.79	380
381	Pure Ammoniated Dissolved Bone.		4.08	5.43	2.43	11.94	2.37	3.92	31.73	381
102	Buffalo Raw Bone.		0.00	3.62	21.71	24.33	4.90	0.00	38.57	102
116	Bone Dust.		0.00	3.76	12.42	16.18	3.83	0.00	30.09	116
129	Complete Fertilizer.		0.00	3.25	14.20	17.45	2.54	1.95	28.56	129
134	Hoosier Bone Phosphate		7.96	0.99	3.26	12.21	2.35	0.40	28.60	134
167	Pure Bone Meal.		0.00	7.99	14.14	22.13	4.08	0.00	39.58	167
205	Raw Bone Meal.	St. Louis, Mo.	0.00	7.77	14.14	21.91	4.02	0.00	41.86	205
224	Pure Raw Bone Meal	apolis, Ind.	0.00	6.68	17.06	23.73	5.52	0.00	44.85	224
230	Pure Acidulated Bone	Co., Cincinnati, O.	2.51	10.20	7.55	20.26	5.18	0.00	46.39	230
242	Pure Pig Foot Bone.	Co., Cincinnati, O.	0.00	9.73	17.16	26.89	3.55	0.00	42.55	242
261	Packing House Bone Meal	apolis, Ind.	0.00	7.49	17.18	24.67	4.98	0.00	40.97	261
262	Pure Ground Raw Bone	ay, Ind.	0.00	8.34	16.31	25.15	3.65	0.00	40.76	262
263	Jarvis Drill Phosphate.	J. S. Wilson, New Albany, Ind.	6.94	2.94	3.08	13.31	1.83	0.00	25.43	263
264	Michigan Carbon Works, Detroit, Mich.	Michigan Carbon Works, Detroit, Mich.	7.46	2.08	0.81	10.35	2.99	1.71	29.34	264
275	Heat Grower	E. Raub & Sons, Indianapolis, Ind.	0.61	3.46	5.08	14.16	3.75	1.11	34.41	275
281	sphate	Cincinnati Desiccating Co., Cincinnati, O.	2.70	5.37	2.66	10.73	3.76	2.46	32.57	281
282		Cincinnati Desiccating Co., Cincinnati, O.	4.53	5.68	2.25	12.46	4.72	6.08	44.04	282
283		Cincinnati Desiccating Co., Cincinnati, O.	0.94	6.00	1.69	11.13	2.03	1.96	27.11	283
284		Loudenback Fertilizer Co., Urbana, O.	1.71	4.35	4.32	10.38	2.18	2.60	25.41	284
285		Loudenback Fertilizer Co., Urbana, O.	4.03	1.90	3.06	8.99	2.92	3.55	27.66	285
286		Miner & Gentry, Rockport, Ind.	2.71	6.76	1.69	11.16	1.05	0.12	21.36	286

TABLE II—Continued.

Number.	NAME OF FERTILIZER.	MANUFACTURER.										Per Cent. of Ammonia.	Per Cent. of Potash.	Estimated Val- ue per Ton.	Number.
		Per Cent. Solu- ble Phosphor- ic Acid.	Per Cent. Re- verted Phos- phoric Acid.	Per Cent. Insol- uble Phos- phoric Acid.	Per Cent. Total Phosphoric Acid.	Per Cent. of	Per Cent. of								
407	Ralston's Bone Meal	N. W. Fertilizing Co., Chicago, Ill.	0.37	4.63	12.86	17.86	3.93	0.00	32.90	407					
408	Currie's Raw Bone Meal	Currie Fertilizer Co., Louisville, Ky.	0.00	3.91	15.91	19.82	4.48	0.19	35.73	408					
409	Currie's Guano	Currie Fertilizer Co., Louisville, Ky.	5.71	2.05	0.79	8.55	1.24	3.38	22.43	409					
410	Currie's Falls City Raw Bone Meal	Currie Fertilizer Co., Louisville, Ky.	4.36	4.38	6.06	14.80	1.34	0.85	25.63	410					
411	Currie's Dissolved Bone	Currie Fertilizer Co., Louisville, Ky.	5.46	2.25	0.61	8.32	1.24	3.21	22.26	411					
412	Currie's Corn Grower	Currie Fertilizer Co., Louisville, Ky.	5.85	3.10	4.84	13.79	2.40	0.85	28.83	412					
413	High Grade Dissolved Bone	Walton & Whann Co., Wilmington, Del.	4.82	8.65	7.75	21.22	2.22	0.00	37.09	413					
414	Powell's Prepared Chemicals	W. S. Powell, Baltimore, Md.	4.78	0.63	0.00	5.41	1.01	6.19	20.87	414					
415	Powell's Bone and Potash Fertilizer	W. S. Powell, Baltimore, Md.	9.11	4.26	1.16	14.53	0.03	1.03	25.10	415					
416	Powell's Red Bag Fertilizer	W. S. Powell, Baltimore, Md.	6.28	3.84	2.74	12.86	1.45	1.14	25.81	416					
417	National Bone Dust	N. W. Fertilizing Co., Chicago, Ill.	2.43	6.04	4.94	13.41	3.07	0.84	30.50	417					
418	Twenty-six-dollar Phosphate	N. W. Fertilizing Co., Chicago, Ill.	2.57	5.37	4.03	11.97	2.41	0.00	25.40	418					
419	Dissolved Bone Phosphate and Potash	Baltimore Guano Co., Baltimore, Md.	10.56	3.12	1.69	15.36	0.00	7.59	34.45	419					
420	Game Guano	Baltimore Guano Co., Baltimore, Md.	7.02	2.06	2.66	11.76	2.61	3.38	33.38	420					
421	"B. G." Ammoniated Bone Phosphate	Baltimore Guano Co., Baltimore, Md.	5.21	2.35	2.70	10.26	1.87	3.56	26.33	421					
422	F. M. Stevens & Co., Indiana Phosphate	Madison, Ind., Fertilizer and Glue Works	5.26	3.25	2.47	10.98	2.90	0.76	27.88	422					
423	Buffalo Guano.	Milsom Rend. & Fert. Co., E. Buffalo, N. Y.	3.70	4.96	2.57	11.23	2.61	1.57	28.21	423					
424	Vegetable Bone Fertilizer	Milsom Rend. & Fert. Co., E. Buffalo, N. Y.	4.39	1.08	2.05	7.52	5.07	5.18	96.02	424					
425	Potato, Hop and Tobacco Fertilizer	Milsom Rend. & Fert. Co., E. Buffalo, N. Y.	5.81	1.40	3.29	10.50	3.04	6.74	34.58	425					
426	Buffalo Fertilizer	Milsom Rend. & Fert. Co., E. Buffalo, N. Y.	6.54	1.47	3.40	11.41	3.37	3.81	33.41	426					
427	Pure Ground Bone Meal	J. M. Miller, Bloomington, Ind.	0.00	8.42	16.63	25.05	3.94	0.00	41.79	427					
428	Challenge Corn Grower	N. W. Fertilizing Co., Chicago, Ill.	2.05	6.61	4.98	13.64	2.99	0.89	30.62	428					
429	Garden City Superphosphate	N. W. Fertilizing Co., Chicago, Ill.	1.98	6.44	5.10	13.52	3.02	0.93	30.47	429					
430	Prairie Phosphate.	N. W. Fertilizing Co., Chicago, Ill.	2.24	5.69	3.93	11.86	2.30	0.00	24.90	430					
431	Tobacco and Vegetable Superphosphate	Springfield, Ohio, Fertilizer Co.	4.25	1.95	0.63	6.83	5.24	7.89	41.57	431					
432	Dissolved Bone with Potash	Bradley Fertilizer Co., Boston, Mass.	6.65	2.17	1.62	10.44	1.25	1.72	23.00	432					
433	Reese's Superphosphate of Lime.	John S. Reese & Co., Baltimore, Md.	8.89	4.50	2.42	15.81	0.30	0.00	25.78	433					
434	Reese's Challenge Crop Grower	John S. Reese & Co., Baltimore, Md.	3.70	7.93	2.46	14.09	1.01	1.57	27.42	434					
435	Pure Raw Knuckle Bone Meal	Dunn & Co., Cannellton, Ind.	0.00	6.46	16.43	22.89	5.98	0.00	43.41	435					
436	Lister's Celebrated Acidulated G'd Bone	Lister's Agr. Chem. Works, Newark, N. J.	0.64	6.79	7.61	15.04	3.80	0.00	32.48	436					

437	Lister's U. S. Superphosphate	Lister's Agr. Chem. Works, Newark, N. J.	5.41	2.03	1.96	9.40	2.21	2.20	26.07	438
438	Lister's Ammoniated Dis. Bone Phos	Lister's Agr. Chem. Works, Newark, N. J.	7.29	2.36	1.62	11.27	2.94	1.71	29.41	437
439	Homestead Corn and Wheat Grower	Michigan Carbon Works, Detroit, Mich.	8.86	1.24	0.79	10.09	2.50	1.74	29.80	439
440	Homestead Tobacco Grower	Michigan Carbon Works, Detroit, Mich.	8.79	1.85	0.93	11.56	4.04	5.55	40.57	440
441	Homestead Potato Grower	Michigan Carbon Works, Detroit, Mich.	8.79	1.93	0.79	11.51	4.06	5.53	40.73	441
442	Jarvis's Drill Phosphate	Mich.	7.92	1.10	1.66	10.67	1.54	0.30	22.48	442
443	Packing-house Blood and Bone		0.00	8.67	12.28	20.35	6.21	0.00	46.89	443
444	Dissolved Bone with Potash		6.98	2.06	1.87	10.91	1.28	1.66	28.63	444
445	Circle Brand		1.43	4.27	6.12	10.82	2.90	2.61	27.61	445
446	Buffalo Brand Pure Raw Bone Meal	Mo	0.00	6.73	17.30	24.03	4.35	0.00	40.94	446
447		Geo. F. Bruner M'g Co., St. Louis, Mo	7.91	8.24	5.72	14.97	3.26	1.83	36.32	447
448		Tripp Bros., North Vernon, Ind.	0.00	6.47	16.08	22.55	4.44	0.00	38.84	448
449		Tripp Bros., North Vernon, Ind.	1.64	7.62	4.61	14.07	1.96	2.36	29.78	449
450		Baltimore Guano Co., Baltimore, Md.	8.76	3.68	3.12	15.54	0.52	0.00	26.48	450
451		James McCallum & Co., Dayton, O.	2.06	6.05	11.39	19.50	1.46	1.10	29.58	451
452		James McCallum & Co., Dayton, O.	3.51	4.93	4.72	13.16	3.37	3.58	34.83	452
453		James McCallum & Co., Dayton, O.	4.14	5.31	4.78	14.23	3.63	0.00	32.95	453
454	phosphate	Milner & Gentry, Rockport, Ind.	0.00	7.16	15.25	22.41	5.00	0.00	42.37	454
455		Globe Fertilizer Co., Louisville, Ky.								455
456		Globe Fertilizer Co., Louisville, Ky.								456
457		Globe Fertilizer Co., Louisville, Ky.								457
458	Meal	Globe Fertilizer Co., Louisville, Ky.								458

* Not at present on the market; only 50 tons made.

† Owing to an error in sending samples, Nos. 401, 402, 403, 405 and 406 were not true samples of this company's goods. For correct analyses, see Nos. 417, 418, 428, 429 and 430.

PAST, PRESENT AND FUTURE OF INDIANA AS AN AGRICULTURAL AND MANUFACTURING STATE.

BY HON. W. B. SEWARD, OF BLOOMINGTON, IND.

A few years ago Indiana was a wild, far western territory. The howl of wild animals and the war-whoop of retreating Indians were familiar sounds to, perhaps, some of the older persons present to-day.

Now her geographical or relative position has been changed, and, instead of a trackless wilderness, inhabited only by wild animals and savage Indians, and situated on the outer border of civilization, she is one of the middle States, teeming with civilized life, buoyant with hopes and expectations, and already taking her place in the foremost ranks as an agricultural and manufacturing State.

This wonderful metamorphosis from a wilderness to a garden of plenty and beauty, from a situation entirely outside of even the borders of civilization, has not been wrought by one of those convulsions of nature by which islands, and even whole continents, are made to sink and others rise, in a new place, but by a power even as irresistible—the march of progress and civilization. The friction of man's energy has worn away the dense forests, and all other obstacles that impeded his progress. Waving fields, well filled garner, busy work-shops, endless railroads, cities, villages, farm houses without number, attest the wonderful work that has been done within the memory of many persons still living. It is not my intention to try to give a history of our State, but for the purpose of tracing the progress of some of the events that have contributed to bring about this state of affairs, now so conspicuous to every one, a few dates will be given.

A territorial government for the State was organized in the year 1800. At this time Indians were plenty within our borders, and many sanguinary battles were fought with them before they were finally subdued, and safety to settlers assured. While life and property were not safe from Indian depredations, but little material advance could be made in developing the resources of the State, or increasing her population, as between fighting Indians and clearing patches of ground upon which to raise a little corn for subsistence, the early settlers could look to nothing else, and, besides, things moved slowly then to what they do now. While there is a large amount of prairie lands in the State, singularly enough, as we look at it now, a large part of the early settlers selected densely wooded lands for farming, which can be accounted for only, I suppose, because all of them came from regions where there were no prairie lands, and where "rail timber" was considered of the first importance. If it was rail timber they were after, they could not have struck a better place, for there was then more of it here to the acre, perhaps, than any other place in the known world.

The labor required to open a farm and fit it for cultivation was such that we may well wonder how it was ever accomplished with the tools and appliances then known and used. The echo from the woodman's ax resounded from morning till night, as with sturdy blows he removed chip after chip from a giant tree, till at last it fell prostrate on the ground, and was then cut off with the ax or "niggered" off with fire into such lengths as could be rolled to a "log-heap," and there consumed with fire. It would be a useless waste of time and brain-power to attempt to calculate the value of timber thus destroyed, and yet we can not help but think of it. But values then and now can not be compared together; in fact, timber had no value or use then, except the rail timber, and an occasional "board tree" from which was made the covering for the humble cabins that were the homes and castles of the pioneers. Roads then were merely blazed paths through the dense forests; railroads had not even been dreamed of; farming was done only in a small hand-to-mouth way, and manufacturing had not been commenced. So there was no way to utilize the timber, and it must be burned so the ground could be cleared for cultivation.

In 1816 sufficient population had been secured, when Indiana was admitted as one of the States of the Union.

The period intervening between the time Indiana was admitted as a State and the present marks an area the most important and wonderful, not only for her, but for the entire civilized world, ever comprised within such a period of time. With the exception of the steam engine, which was invented, or rather perfected, so as to be of some practical use in the year 1776, almost all of the labor-saving inventions that have contributed so largely in developing our State were made within the time mentioned. The plow that has turned up untold wealth for us had not, at the beginning of this period, even commenced to grow; the wing that, by continued evolutions, has developed into the mold-board of the plow of to-day. The "bar-shares" plow (an interesting specimen of which may be seen in the museum adjoining this room) was the very best plow known and used then. The past and present of Indiana is so intimately connected, and largely dependent upon the plow, that it would be of interest to trace its various evolutions from a crooked piece of wood to the elegant and perfect production of to-day, but the limits of this paper will not admit of it.

In the early days of Indiana farming was almost the sole dependence for making a living, for of manufacturing we had absolutely none. There was no such thing known as a factory or machine shop devoted to making a specialty as now. Implements were made of iron and steel by blacksmiths of more or less skill, and oftener with little skill, but such as there were had to be used, as none better could be obtained. The first and most important implement in use at this time was the ax, as with it traces were blazed through the forests, cabins built, trees removed, and various kinds of wood implements made, so that to the pioneer the ax was the tool of all tools, and most highly prized when a good one had been obtained, and ever since my recollection I have known men to ride more than one hundred miles on horseback to obtain an ax of my father, who was one of the pioneer edge-tool makers of the State, and with a reputation for the excellence of his productions wider than her borders.

It would be interesting and within the scope of this address to give something of a history of the rise and development of manufacturing in our State, but time will not permit anything like justice being done the subject, even if I were competent for the task, so I will not attempt it, but hope some one will commence the work soon, as when the last of the pioneers are gone much of the now unwritten history of our State will be lost forever.

But, enough of the past; what have we of the present? Indiana has taken her place as the fifth State in population, first in educational facilities, first in the production of wheat, third in raising corn, second in hogs, while in the items of cattle, horses, poultry, eggs and dairy products, are high up in figures, so that the aggregate of all her productions in connection with farming reaches the enormous amount of \$190,550,000 annually; and when we add to this sum \$165,700,000 for manufactured productions not connected with farming, we have the gross sum of \$356,250,000 as our annual production.

The labor required to produce this grand result is beyond computation if reduced to manual labor, and, in fact, would have been impossible except by the use of iron muscles and the leverage of tireless machinery. The multiplication, during the past fifty years, of labor-saving machinery, together with and as a result of advanced education which enables us to apply science as well as muscle in every association of life, has made it possible to produce this result. When we remember the many disadvantages under which the early settlers labored before any marked progress had been made in improved tools and machinery, and before the grand system of railway transportation we now have had been inaugurated, we are only the more amazed at the result. We can, with becoming pride, refer to our growth and wonderful progress up to this time, but not spend too much time about it, for there is a future of our State that should claim our undivided attention. The geographical position of the State of Indiana has been favorable for the development of her transportation facilities. The great lakes on the north and the Ohio River on the south makes almost all of the through lines of railroads from east to west pass through our State, and these, with numbers of north and south lines, and innumerable shorter or local ones crossing the main lines in every direction, gives us exceptionally good railroad facilities. In my judgment no one thing has contributed so much to our development and prosperity as the railroads, as without them we would have been a useless community. No, I am wrong; without them we would not have been a community at all, and this meeting to-day would not have been held. The rocks with which this magnificent State House has been built would have laid another period of countless ages in their native beds, nay, they would have laid there forever, and our venerable Secretary (in years of service) would not have been able to fit up a museum in the next room, filled with ancient and modern productions for our instruction and amusement, for the room would not have been there, or he here. He might have existed in a partially developed state in some remote place, and, like the rest of us, be wholly unknown to the outside world. But all this is too horrible to contemplate further, for, happily, we have the railroads, and the State House, and the museum, and the Secretary, and so many hundreds of other things that contribute to our wants, that we can not be too thankful for railroads, and for the important bearing they have on

our welfare. We should do all we can to sustain the ones we have, and encourage the building of others in every available place. Nothing we can do will pay better, or work faster, in still further developing our resources.

We have now hastily glanced at the past and present, but what can we say of the future? Perhaps it is best that true prophetic vision is not given any one, and future events are left to be unfolded as we come to them, but mainly as we make them.

Had some one, fifty years ago, with a mind sufficiently imaginative, and endowed with a genius that would enable him to draw a perfect picture of to-day in our State, he would have been unanimously voted a crazy dreamer. If I were artist enough, and had a vision that would penetrate fifty years hence, and paint you, in perfect colors, a likeness of what I saw, you would no doubt, give me the same vote. So many seemingly impossible things have been done since our day, that we are almost educated up to the point of not being surprised at anything, and yet we are inclined to think, like every other generation, that we have now about reached the end of wonderful inventions and improvements, and that, in fact, about all the open space has been filled, and there is no room for more. Human nature now and fifty years ago is just the same, and will be fifty years hence, and for all time to come.

The cautious writer fifty years ago prided his people on the wonderful progress made in the fifty years just past, and as the improvements seemed to cover about all the available ground, it was not likely that future generations would have much to do, only to enjoy the improved methods then in use. If this writer could have taken a nap just then, and awakened to-day, what a surprise would be in store for him; but not greater than would be the surprise to us, should we *Rip Van Winkle* the time for fifty years, and then awake to the scene that would be spread out before us.

There have been times in the world's history when, for long periods, there were no perceptible improvements, and times when it even went backward, and many of the improvements of one age were lost to some succeeding ages, but fortunately we do not live in times of this kind, and since the era of education set in, retrograding is impossible. In animal creation, all that is learned by an individual dies, and is lost with it, and succeeding generations of the same species can have no advantage from anything known by their ancestors, so there can be no accumulation of knowledge. The horse of to-day knows no more than his ancestors in the wilds of Arabia, a thousand years ago, and so it was with man at one time, and would be still, only for education.

We are increasing in knowledge at a faster ratio now than ever before, and to what extent it will finally carry us no one can even guess, but that it will result in more and more improvement to us and our State, and the development of interests that we now have no thought of, no one can doubt. The farming and manufacturing interests of Indiana have now reached large proportions, and yet have only commenced.

Improved methods of farming have succeeded in restoring worn-out lands to more than their original fertility. Under drainage has not only reclaimed vast tracts of swamp lands and made them fit for cultivation, but has increased the

crop yield on other lands to such an extent that now no one posted in such matters pretends that a farm is in proper condition for a high state of cultivation that is not underdrained.

Proper rotation of crops and underdraining has probably increased the crop yield of Indiana 50 per cent. in the past ten years; but have we reached the end of improvement in this direction? Most certainly not. There is room for other and even greater improvements in the future, and that they will be made I have the utmost faith. We have made these improvements in modes of cultivation, stock raising, etc. Yet it is certain that we do not know all that can and should be known of the ways of nature in her wonderful and mysterious productions of animal and plant life, but education will in time supply this want. The future of Indiana will be whatever we make it. We are each a part of the great whole, and whatever we are as individuals, combined makes the sum total of what we are as a State. A stream can not rise higher than its source; the State can not be greater than we are. There is room yet for vast improvement in every direction and in every association in life. State pride and the desire for gain natural to every one are proper notions for increased exertions on our part.

In the future as in the past Indiana will be pre-eminently an agricultural State, but her manufacturing and mining interests, including the quarrying of building stone, have grown to quite large proportions and are increasing every day.

We have an area of 6,500 square miles of good workable coal, our natural gas field extends over an area of 5,000 square miles. Oolitic limestone, such as our State House is built of, covers an area of 5,000 square miles, and is inexhaustible, while more than 5,000 square miles is covered by other kinds of building stone. Iron ore, kaolin, fire clay and timber are found in great abundance in various parts of the State. It will be seen from this statement of our resources in raw material that we have the foundation to sustain an enormous manufacturing interest.

Now, while it is important to increase our agricultural products to the greatest extent possible, yet if remunerative prices are to be obtained for the surplus of these products there must be consumers who are not producers, otherwise a home market, which is or should be the best, as it saves transportation expenses, can not be had. Consumers who are not producers must have employment to bring and keep them here, and to enable them to have the means to buy this surplus.

It is then as much our interest to help and encourage manufacturing as that of agriculture, and, besides, when we have the articles we need manufactured within our State, it saves sending money out of the State to buy them, and even if we pay for imported articles with our surplus, the margin of profit over cost is lost to us. When we have our ultimate and best success, it will be when we have the greatest amount of diversified labor.

The recent discovery of natural gas in such quantities in Indiana has given an impetus to manufacturing never known here before. Many millions of dollars, and quite an increase of population, have already been brought into the State by reason of it, and more is coming all the time. Capital, always on the alert for safe and profitable investment, long since discovered the great advantage of natural

gas over all other kinds of fuel for manufacturing purposes. Our great abundance of gas fuel will continue to attract capital and people to our State, so that from this source alone untold wealth will be given us.

No State in the Union can furnish all kinds of fuel so cheaply as Indiana.

No other State in the Union has advantages over Indiana when we consider the fertility of her soil, the extent and value of her coal fields, the volume of her natural gas, the quantity and quality of her building stone, the abundance and quality of her timber for building and manufacturing purposes, the extent and perfection of her railway system, and her unequaled facilities for securing a common school, scientific, classical or polytechnical education.

With all these natural and acquired advantages, may we not, with certainty, predict a rapid increase in population and wealth, and a brilliant future for Indiana?

DISCUSSION OF THE PAPER.

Hon. J. C. Stevens, Centreville. That is a most valuable paper in every particular, it points out the wonderful growth and development of our State. I was sent as a delegate to the National Agricultural Congress in Alabama. I have crossed over this country since that and seen several of the States and Territories over which our flag floats. I come back to Indiana loving the dear old flag with its every star better than I did before. I came back to my home, looked upon our fine herds of Shorthorn cattle, and I said to my wife and children, "we will not move from Indiana." When at the great Southern Exposition held at Montgomery, Alabama, I wanted to investigate the agricultural implements. Accompanied by a friend I strolled out for that purpose; in his presence (he is here now) I will assert, so help me God, there were only two machines for planting cotton. We thought then we would look at the stock department. One of our energetic Illinois hog breeders thought he would take down a few fine hogs. He took them down and placed them in the pen and they made a good show. On the other side of him there was a simon-pure razorback. The committee came around awarding premiums and tied the ribbon on the razorback hog. Of course this affronted us Northern men and we took the chairman of the committee to task. He said, "Gentlemen, I will be honest with you; these short-legged hogs will do in your country but they wont do

here, for damn a hog that can't out-run a 'nigger'; we have to give nigger speed to our hogs." [Laughter.] So, if you wish to show in the South, take a speed hog. [Renewed laughter.] That country is very much in the background in the way of improvements, yet some of them boast of their great progress. I told them they had better quit talking free trade and tariff and educate the laboring classes. The best salvation for that country is to educate the people how to hitch up their teams, plant, cultivate and market their goods. I am still of the same opinion, and from this assembly should go forth the proclamation that Indiana is in the first rank and, by the help of God, we aim to stay there.

KIND OF APPLES TO GROW IN INDIANA.

BY HON. R. M. LOCKHART, OF WATERLOO, INDIANA.

The topic assigned to me for discussion is "The kinds of apples to grow that are adapted to the soil and climate of Indiana."

The subject is an extensive one, and it would afford me a great deal of pleasure if I were able to give a complete and satisfactory answer to this great question. I am aware of the fact that I am addressing some who may have arrived at the conclusion that it does not pay to give any thought or attention to the growing of apples, as they have been failures in sections of the State. But the past year has demonstrated the fact that the apple crop of Indiana has been a very important factor in the finances of many of our Indiana farmers in at least three-fourths of the counties of this State. As an evidence of the truth of this statement, I will say that the two counties of Steuben and Dekalb have marketed within the past three months not less than 300,000 bushels of apples of the different varieties. I have no means of knowing the amount of fruit shipped from other counties, but I am informed that large amounts were grown in the southern part of the State, for which a ready market was found in the East.

Many of our farmers realized more money out of their apple crop last fall than from their wheat. The owner of one orchard, within one mile of my home, sold his crop of apples on the trees at \$55 per acre, the buyer picking and hauling the fruit himself, and from an orchard within a quarter of a mile of my own, containing about eight acres, the trees of which were bought from a nursery at Lagrange, Ind., by myself nearly thirty years ago, the present owner tells me he has netted about \$300 per year for the past ten years. From the station at Augusta, Steuben County, there was shipped the past fall over 21,000 barrels of winter apples alone. From some orchards there were taken 300 to 500 barrels. The greater part of this fruit was marketed in the States of Pennsylvania and New York.

From the above statements I think it will be admitted that it does pay any man that has a piece of land, I care not how few acres there may be in it, to devote a portion of it to the raising of fruits.

Now, as to the kinds of apples to grow that are adapted to the soil and climate of Indiana. Every one that has given this matter particular attention will agree with me when I say that the apple that does the best in the south part of this State is not the apple to be grown in the north part, and *vice versa*. I have given some attention to the handling of fruits for a number of years. I have shipped fruits from the north part of the State to this city for the past twelve years, and have come in competition with fruits grown in the southern part of Indiana, as also from the States of Virginia, Kentucky, Illinois and Missouri. During the past two months of November and December the bulk of the fruit that I found on sale coming from the South consisted of about five or six varieties, the

bulk of which was Ben Davis, the balance Rome Beauty, Wine Sap, Limber Twig and Genetins. For the information of those who contemplate the planting of orchards in the different parts of the State I have endeavored to secure as accurate information as it was possible for me to get by making inquiry of those that I knew were thoroughly posted on the varieties best suited for the different localities. With this object in view, I wrote to the Hon. Sylvester Johnson of Irvington, Prof. C. M. Hobbs of Bridgeport, and W. A. Workman of Greencastle, asking them to give me the names of the varieties best suited to be grown in the southern and central part of this State. After a comparison of the answers from each of these gentlemen, I am able to give the following list of varieties:

Summer Varieties—Yellow Transparent, Early Harvest, Red Stripe, Red Astrakan, Benonie, Golden Sweet, Early Ive, and Duchess of Oldenburg.

Fall—Maiden Blush, Rambo, Tulpehocken, Famous, Wealthy, and Fall Wine.

Winter—Grimes' Golden, Roman Stem, White Pippin, Stark, Willow Twig, Indiana Favorite, Clayton, Indiana, Ben Davis, Lansingburg, Rome Beauty, Smith's Cider, Wine Sap, Janette, Pewaukee, York Imperial, Red Sweet Pippin.

For the northern part of the State there are a much larger variety that are grown successfully. I can only name a small number, as there are more than 200 varieties that might be named:

Summer—Red Astrakan, Tetafsky, Sweet Bough, and Kessor's Codlin.

Fall—Chenango Strawberry, Hup, Fall Queen, Maiden Blush, Ohio Nonpareil.

Winter—R. I. Greening, Baldwin, Yellow Belleflower, Northern Spy, Belmont, Tulpehocken, Snow Apple, Jonathan, Canada Reonnett, Steel's Red, Golden Russet, Rax, Russet, Stark, Talmon Sweet, Wagoner, Walbridge, White Pippin, Rambo, Holland Pippin, Spitzenburg, Virginia Red Streak, Vandever, Red and Green Seek-before-the-King, Black Gillflower, Red Canada Porter, Gate, Smoke House, Ben Davis, Wealthy, Grimes' Golden, Winter Wine, Twenty Ounce, White Winter Pearmain, Glaira Munda, Curtis Sweet, and Calvert.

I think I have given a list sufficiently lengthy to enable anyone to make a selection of enough varieties for any orchard. The great trouble that packers and shippers find in going through the country to contract for fruit for shipping is the large number of varieties found in almost every orchard. When an orchard is found to contain fifty or one hundred trees of some one of the best varieties, say Baldwins, Greenings, Northern Spy, or Belleflower, the owner can get almost any price he may ask for his fruit, as it is an object for the buyer to pack in such orchards.

A few words in relation to the planting and care of orchards and I am done. Too much care can not be given to the preparation of the ground before planting out a young orchard. Many of the old orchards in my part of the State were set out among the stumps soon after the land was cleared. The land being new and strong the trees grew vigorously and in a few years began to bear fruit, and in every case where the owners have taken care of their orchards by giving the ground a sufficient amount of manure from year to year to keep it in a fertile condition, I know of no failures. Many of our fruit-growers have taken the precaution to thoroughly underdrain their orchards, which I claim should be

done with every orchard. I care not how rolling the land may be, and in the setting of new orchards there is no danger of getting the land too rich before planting out the young trees, and be sure to put a tile drain down three or four feet between every row of trees, either before planting or immediately after.

DISCUSSION OF THE PAPER.

Mr. Lockhart. We have a man in our town who is a kind of an inventive genius; he has invented a small gun, something like our old-fashioned squirt-gun, with which we can throw water over a tree. I would say do not spray until the blossom is off if you have any interest in your own and your neighbors' bees. In eight or ten days spray again.

Mr. Mitchell. What remedy do you have to prevent apples from falling off?

Mr. Lockhart. My experience is, an insect that stings the fruit gets in the apple at the start and kills the fruit and it drops off. The vigorous growing fruit is not going to drop off.

Mr. Mitchell. Some say where the fruit is thick, go around and knock some off.

Mr. Lockhart. If you will, take cloths and put around the body, up three or four feet; after remaining on for a short time take them off and mash the insects which collect on this cloth. This will prevent, in a large measure, the destruction of fruit by insects. If you will jar your trees two or three times and let your hogs come in, you won't be troubled near so much.

In the spring, after the apple is formed, the codling moth comes, and after the first crop of moths is over, if you don't take care of the orchards, you will find them injured.

Mr. Chipman. As to jarring the insects off, it should be done early in the morning. By spreading a sheet under the tree, they can be gathered up and destroyed.

Mr. Lockhart. Many do that; it is a good way, but hogs will gather them up largely. As to spraying, the expense is trifling, London purple and Paris green are both used; I use Paris green. Mr. McNaley, who makes this little machine, also has a mixture which he thinks is very valuable for spraying. I

took a fruit can and put some of this mixture in and dusted it over the cabbage and killed the millers. I also put some on cucumbers with good results. Mr. McNaley says he uses this preparation on all kinds of fruit trees. Sometimes when we use Paris green it will destroy the foliage, but in this case Mr. McNaley has done much to improve over things in this way. I can take that little gun and go around the tree and in five minutes spray the entire tree. For a small crop it will do, but if you have 500 or 1,000 trees, you want a larger machine.

S. W. Dungan. What is the name of that remedy?

Mr. Lockhart. I do not know what material it is made of. It is not poisonous, and can be put on your cabbage without any danger. Dilute in water.

Mr. Gilhart. In Michigan they use Paris green on their fruit altogether. They take a wagon on which is placed a barrel containing the solution of Paris green, which has to be stirred all the time to hold it in solution; to this is attached a force-pump; by this means the trees are readily sprayed. This spraying is done three or four times.

E. J. Howland. Mr. Lockhart starts out too late in this spraying business. It should be done before the bud is out. Not only the limbs but the bodies should be saturated. The curculio subsists on the dead bark of the tree before it puts out. My experience is that it is best to saturate once before flowering, and just as they fall give another spraying. My objection to his little gun is this: You can't throw a continual stream in a certain direction unless you have an air chamber. A man is not always marksman enough to hit by squirts; to do the work effectually we should keep up a continual stream. I expect to spray my currant bushes with white helebore.

J. W. Robe. Would not helebore be as effective as Paris green to spray trees and bushes?

Mr. Howland. I think it would.

S. Johnson. I have not much to say on this subject; I wish, however, to ask Mr. Howland why he sprays before the fruit forms. My understanding is the codling moth is a miller that comes around about the time the bloom drops, and lays eggs

in the blossom end before turning down. This egg hatches and runs down in the apple. The spray lodges in the blossom end of the apple and kills this moth, and that is where the good comes in. The question is, "why spray before the codling moth comes around?" as he says because they are on the bark or limbs. I do not understand this. As to Mr. Mitchell's question a while ago, as to why fruit falls off, there are two causes. One is, the trees are overloaded, and have to fall to make room for the rest; nature provides for this on the tree; and another reason is, the worm gets in and makes it imperfect, and it falls off. If we can keep this worm out by spraying, it is all right.

E. J. Howland. The object of spraying and saturating the limbs before the bloom comes is this: We know the miller must subsist on something before the bloom comes if he is able to attack it as soon as it does come. I have tried it on a Duchess tree, and not one apple fell during the season; all matured, and was not troubled with the codling moth. I do it because I think it effective. I am not, however, posted in the transformation of insects, but think they must subsist on something or they could not do the work when the bloom comes.

J. B. Conner. In regard to the matter of fruit falling, I think it due largely to the lack of drainage; where there is stagnant water at the roots of the tree it lessens the vitality of the tree.

Mr. Sieg. It keeps the sap cold.

W. B. Seward. I think that theory won't work. Nine-tenths of the apples which fall in the early stages are those which had worms and ripened prematurely. It occurred to me that spraying should be done after the apple is formed and cup made. It don't leave with the bloom, but creeps in after the cup is made, and then would be the proper time to apply it.

C. M. Hobbs, Secretary Indiana Horticultural Society. I wish to suggest to those who are interested in this matter of spraying, that the next report of the Horticultural Society will contain a list of insecticides, and the amount to use.

R. M. Lockhart. I want to call your attention to two years

ago, when we had a fine show of fruit, but perhaps not quite equal to last year. One evening of the fair I noticed a stranger coming around looking at the fruit on the tables. I had noticed him several times, a man who was calculated to attract attention. I finally spoke to him, and learned that he was an Englishman, and lived in London. He had been over the grounds looking at the stock and farming implements, but when he came to the fruit, he said it was the nicest he ever saw. The fruit in England was in no ways as nice as we have here. Our fruits were of such fine appearance, as well as quality, he thought we could work up a foreign trade. Said he, "an apple of your kind would bring two pence, or four cents, a piece in our market," and said, "it would pay us to wrap our nice apples in paper and send to the old country, where they would bring us good prices." This was a suggestion for me to think of. You may take the train and go in any direction, and you will see old orchards with limbs laying around. It shows that there is no care taken there, but whenever you underdrain the soil and manure, you can raise fruit, and not until then.

KEEPING BOYS ON THE FARM.

BY D. L. THOMAS, RUSHVILLE, IND.

Of late years the wide-spread disposition among boys to quit the farm and flock to our towns and cities has attracted the earnest attention of thoughtful men; and the wide range of discussion which the subject has taken shows that the exodus is not only a grave problem, but one of difficult solution.

In the first place it is neither wise nor desirable to keep *all* the boys on the farm. Where nature has distinctly marked a boy for a different calling it is both wrong and cruel to compel that boy to follow farming. It is eminently just to him and to society that he should follow his heaven-appointed calling. Furthermore, our cities need the infusion of fresh and vigorous blood, for the degeneracy of boys in our cities has also become a grave problem. Opulence, idleness, fashion, folly and vice enervates and demoralizes the youth of our cities to such an extent that our bright, robust and industrious boys take their places, in a great measure, and become leaders in state craft and in professional and business pursuits. While this decadence characterizes city life, the welfare of our country demands such an influx from the farm.

But all will agree that this exodus from the farm is overdone, and that it is largely a detriment to such youth. Dissatisfaction with farm life seems to be increasing among the boys. The cause and the remedy is the question of the hour.

There are two important reasons which will fairly cover the ground.

I. THE DEFECTIVE SOCIAL CONDITION ON THE FARM.

Our social disposition is an important characteristic—an inborn gift implanted by deity. But, unfortunately, it is sadly overlooked and neglected in country life. And the reason is apparent; the life struggle and privations of the pioneers who subdued this country compelled them to look to absolute necessities—food, shelter and clothing. But, at the same time, their dependence upon each other brought them together weekly and often daily. In that way incidentally their social wants were gratified. For their log rollings, house and barn raisings were not planned for social enjoyment. Yet, both men and youth managed to extract a great deal of social enjoyment from such occasions. Then the farmers' wives had their quiltings and wool pickings. And those events of the day were followed by jolly gatherings of the young people at night. That may properly be styled the social period of "Hoosier farm life." So far it has been the happiest period; and perchance the happiest that will ever be realized. It was the period of unselfishness and of contentment. Then no one ever dreamed of the question "How to keep the boys on the farm," for the boys did not wish to leave it.

But the conditions have changed; there are no such gatherings now as then. And what now about the gratification of the social nature? Scarcely any provision has been made for it. As a rule farmers are not organized for their own social, intellectual and material advancement. The young people have no such opportunities for enjoyment as were known in pioneer times. Parents wait for their sons and daughters to evolve methods for themselves and then object if not acceptable to the parents. Boys grow discontented with their situation. They visit our towns and cities and become enamored with the "glare and glitter," and flock thitherward with crude and wrong ideas and are disappointed or swallowed up by immorality. This is all wrong and parents are to blame for it. They can stay this current, in a great degree, by attending to the social wants of their children.

II. A WANT OF COMPANIONSHIP BETWEEN FATHER AND SON.

This is one of the saddest features of farm life. Indeed, a too prominent feature among all classes. Home intercourse is not what it should be. Many farmers seem to have no conception of this matter. In their anxiety to gain a livelihood they habituate themselves to direct or command their sons. From day to day they tell them what to do without taking their sons into their confidence or counseling with them. How many sons to-day know anything of their father's plans for the year before us? The boys learn to do the bidding in a mechanical sort of way. Often labor becomes a drudgery like with the slave of ante war times. Thus the chasm widens between father and son. The boy's social nature is stifled and chilled, while he longs for the time to come when he can get away. Without social enjoyment at home and little in society he ponders where he will go. He dreams of the city allurements and he is gone.

In view of this situation, let us picture an ideal farm home. The father reads and thinks and makes himself capable to rear sons. He begins to lay his plans before his sons as soon as they can begin to reason. He teaches them to work with an aim in view. He explains and gives reason for what he does and for what he requires of them. With them labor does not take the form of servitude. The mental and physical work in unison. Their minds are occupied with their work instead of their brains planning folly or mischief while their hands are engaged at labor. The boys are partners in the farm business and can't help feeling interested. They soon learn how they are sharing in the profits. And from this beginning it is easy to impress them that by strict attention to business they are helping to provide future homes for themselves. And, at the same time, this method is caring for and developing their social and intellectual nature. Boys thus brought up don't yearn to get away from the home. And should circumstances ever require such a separation a bond of affection continues and home influence ever afterward wields a sceptre over their lives. Moreover, should death take the father from such a home, the boys have been so trained and become so interested that they carry on the farm with success.

In a majority of cases where the son does not follow the calling of the father it is caused by a lack of congeniality between them. The son seeks a different

calling because it takes him from the presence of his father. This is a sad, yet a true picture. For where there is a congeniality he takes his father for an instructor and becomes proficient in the calling more easily and with less expense than he can any other.

Whenever farmers make home intercourse what it ought to be, and provide for the social and intellectual enjoyment of their children with hours of respite from daily toil, then this grave problem will have been solved.

DISCUSSION OF THE PAPER.

Mr. Beeson. While this article is excellent, it occurred to me we need the organization brought down to county and townships to enlist the interest. We need a general organization over the county with a leading social feature.

President Davidson. That will grow out of the institute feature.

Mr. Sieg. That everlasting complaint of not liking the farm has a tendency to drive boys away from it. I don't believe the farmers used to enjoy themselves better than they do now. I think the farmer boys enjoy themselves better than they did formerly. We should not refer to the past but let us talk of the present. There is liberty on the farm, then why should we restrict, holding the young in check. Quite a prevailing feature among the boys is to leave the farm and go to the city and take up some profession; if these boys have any ambition in a certain direction and want to go to the top of the ladder, they should not have any restriction laid on them, but let them go out and make the race as honorable as possible. The best men we have grew up on the farm and went out to other professions. They should be left to choose their profession and make the battle of life. I have chosen that which is best to me and I want every boy educated to make that choice which is best adapted to him without restriction.

Mr. J. S. Wright. I am interested in boys, the education of boys and farm life, and can not refrain from saying something on this subject, having been raised on a farm, and have two boys now on the farm. I am perfectly willing for them to choose a profession for the future. I am confident under the present system of farming there is no occupation in the city

better than that when well fixed on the farm. The only way to teach a boy to be economical is to save yourself and to teach him to save by doing so. We, as representatives of the farm, are responsible for the boys not liking to live on the farm; we talk to them about the hard times we used to have and we inspire the thought that the boys have a hard time and they want to go to the city. There is no place in life that is so good as on the farm. If there is anything raised he has the first slice and he has more leisure hours than the business man. Although prices may be low, it is not to the advantage of the farming interest of the State of Indiana to cry "hard times" and teach the boys that they have hard times, but on the contrary, while everything is dull they are not "waiting for something to turn up," but can go to work and turn something up. That should begin in our institutes and fair associations. We should talk of the happiness of farm life and cultivate in the minds of our boys a love for that occupation. The farm will pay and we have enjoyments that are not found anywhere else. I am glad we don't have to go to the towns and cities to find intelligence, for we find on the farm as much intelligence as anywhere.

R. M. Lockhart. We should take our boys in partnership with us on the farm, give them a pig or calf to look after, and when it is sold let them have the money; it creates in them an interest in farm life. When you hold institutes get your boys and girls to come out and do the singing, and get them to feel an interest in the work. Every business in the world rests on the farmers of our country. If the farmer lags, every other business lags.

Dr. Smart. I did not hear the reading of the address, but it has been the fashion in this State, as well as in other States, to take the best boy and make a lawyer or doctor of him. That has been the understanding to be the appropriate thing to do; hence the boy thinks he had not best stay on the farm. It is understood that education is a good thing for the farmer; men here have been educated. Many get an education outside of school by hard labor; boys don't get an easier way, and I am

thankful for it, but the good time is coming when he will get his education in a school that will not turn him away from the farm. Purdue has been criticised some because it don't have more boys in the agricultural department of the school. Why are they not there? It is because they are not sent there. We should have five hundred there. If we can do anything more we will do it, for we are anxious to turn out a large number. The farmers are ground down somewhat, but it is an unwise thing to complain before the boys; it has a tendency to instill into their minds the spirit of discontent.

WHAT FIBER CAN BE GROWN BY INDIANA FARMERS AS A SUCCESSFUL SUBSTITUTE FOR SISAL OR MANILLA?

BY HON. J. Q. A. SEIG, CORYDON, IND.

This subject at first glance would seem to be one of very little importance or interest to the average farmer of the State of Indiana, as the cost of binding an acre of wheat seems to be so small when compared with what it was when the labor had to be done by hand. But when we go to making the figures and foot up what it costs to bind the entire wheat crop of the State, we soon see the vast importance of the subject. Take the year 1888, when there were produced in the State 2,726,111 acres of wheat. The twine for binding the same cost, on an average, about 25 cents an acre, amounting to the sum of \$681,527.75. Now, suppose that one-half of this amount, or \$340,763.87½, could have been saved, it would have added considerably to the profits, it being 3½ per cent. of the value of the entire crop produced, counting it at 70 cents per bushel, there having been produced 28,750,764 bushels.

Now, while profits are so small in farming, this would be quite an item to save. The question is: Can it be done, and what fiber can be raised in the State that will save to the farmers this amount of money? The fiber for binding must be long and strong, so that in the manufacturing of the twine in order to give it sufficient strength the twist need not be such as will make the twine kink or knot, as that would be a fatal objection to its usefulness. Therefore, we have to look to such fiber producing plants as flax and Indian hemp. Can hemp be produced in the State? In looking back over the statistics and census reports for a period of thirty years, I do not find any hemp reported as grown in the State, consequently it would be mere guess work to figure anything in regard to growing this fiber; but I do find that flax has been grown at a profit in the State, the seed selling at 75 cents per bushel, and the fiber at \$120 per ton, which would be 6 cents per pound. In the year 1880, there were 1,565,546 pounds of flax fiber produced in the State of Indiana, or about one-fourth enough fiber to have bound the wheat crop of the State. This crop, as I said before, brought on the market about \$120 per ton, or 6 cents per pound. It certainly could have been manufactured at a profit for 4 cents per pound. This would have saved to the farmer at least one-half of the cost of binding.

Then, suppose again, that we produce in the State a sufficient quantity of the fiber to bind the entire wheat crop of the State. It would require, allowing that it takes two pounds to bind an acre, 5,452,222 pounds of fiber, and allowing 400 pounds of fiber to the acre, it would take 13,630½ acres to produce it, taking that much land out of competition with wheat growing, putting it at perhaps more profitable employment.

• But, then, perhaps a better thing than this awaits the farmer. I see that it is now most certain that a binder has been constructed that needs neither twine nor wire, but takes a wisp of straw from the ground, puts it around the bundle and ties it more perfectly than the most adroit hand can do it. It is said that the machine is no more intricate than the twine-binder, no heavier, and just as easy to manage. So certain is this that the Illinois State grange having offered \$10,000 for a machine of this kind, proffered the inventor the money for the invention, but he refused, having been offered more money elsewhere.

DISCUSSION OF THE PAPER.

Mr. Strange.—I bind with wire; have been using it for nine years; paying 7½ cents for wire and bind cheaper than my neighbors.

Prof. Latta. Nothing of this kind has come under my notice. There is a report of something having been done in this line, but not to my personal knowledge. It is a thing wholly conjectural, as the paper states. I have no suggestion at present to offer, and do not know what course we should adopt. There should be, however, some essential efforts to try the experiment.

Mr. Mitchell. Has any one had experience with jute? At New Orleans some gentleman of the Southern States exhibited some fine plants. It is a rapid grower. I do not know whether it would grow here or not. It was rank there and profitable to those that grew it. It would be coarse for fine twine, but for binder twine it is certainly what we want.

Mr. Davidson. We use Kentucky hemp.

Mr. Mitchell. Is there any trouble in rotting of this?

Mr. Davidson. It is not adapted to our labor here as well as in Kentucky. It costs about 16 cents per pound.

FARMING IN PALESTINE.

BY REV. DR. J. S. JENCKES, OF INDIANAPOLIS.

As a native of this State I believe in Indiana, through and through, as the very best of our forty-two States. I think that, with her wonderful resources, both developed and prospective, her situation, climate and soil; that with her over two millions of people and ten thousand free public schools, and nearly seven thousand miles of railroads running into all but three of her ninety-two counties, and with her many other obvious advantages, she easily outstrips the other States. Now my present object is to show off these, her excellencies, and to suggest by such showing her possibilities of the near future as an inducement to all who are less fortunate than we citizens who are already settled here to cast their lot among us and share our rich heritage. I have thought I could do this best by contrast, as a bright object looks still brighter and more conspicuous when viewed against the background of a dark object. If you wanted to show off the points of a fine horse you could do it a good deal more forcibly by having an old sway-backed, ewe-necked, spavined "woods colt" standing idly and feebly around than by having him picketed along side of Maud S or our own Axtel. I propose, then, gentlemen, to show by contrast that the Indiana farming is better than that around Jerusalem.

The Holy Land has an area of sixty-five hundred square miles—one-fifth as large as the State of Indiana. Jerusalem is the leading city, from its sacred associations, with a population of 22,000, while Beyrout, with 60,000 inhabitants, is the leading commercial place. I need not, although a practical farmer myself in my younger days, describe to you the methods and process of Mississippi Valley farming, although I'll venture to remind you that within the memory of the most of us there has been great improvement in these processes and methods, in the use and quality of labor-saving machines, in thoroughness of cultivation, in knowledge of the chemistry of the earth, and of the air, and of various atmospheric phenomena, as calms, and storms and rainfall; and of the insects and birds which are our enemies and the birds and insects which are our friends, and in a host of other things which are taught ably and freely to the ambitious young men at our excellent agricultural college. The agricultural interests of Indiana have, within the past twenty-five years, increased and improved more than anywhere else; and here I'll note my first contrast.

The farming in Palestine stands just where it did twenty-five, yes, a hundred, yes, forty hundred years ago, so that when we study it we are studying the methods of the time of Abraham. Most of the country is covered with stones, like parts of New England, so that it may be truly said of it that it has "two or three of stone to one of dirt." A man said to a friend there:

"Where do you get the stones to make all these fences?"

"Why, on the ground; don't you see them lying all around here?"

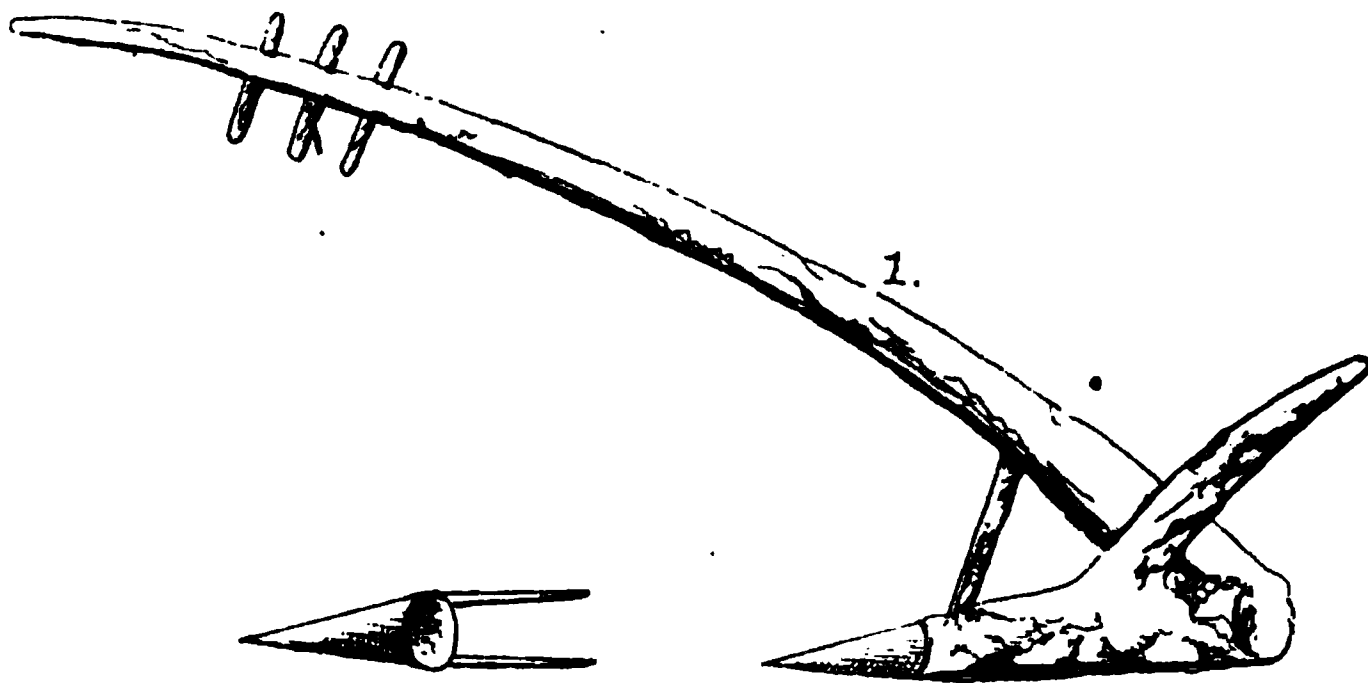
"Yes, but I don't miss any."

The stones are being constantly broken up by the elements and the cultivation, and the people throw the loose ones in the fence rows; so, you will see the fences thus widened by these stones cast against them until they are six or eight feet high and wide enough for a team to drive on top of them.

The plow they use is the same plow that has been used there for the past four thousand years. They are not a progressive people, although they think themselves the "salt of the earth" and that we are barbarians. They call us *kelb Nas-ranny*, which means, in their language (the Arabic) Christian dog. This story will illustrate their enterprise:

When DeLesseps was building the Suez canal, he tried to get them to use wheelbarrows to haul away the dirt, which they had been carrying off in their hats. To save his life he couldn't make them wheel the barrows. They would shovel them full of earth and then lift them up and carry them off on their backs and empty them and carry them back, every time.

Their plows make no furrow at all, but only scratch the ground a little, throwing a little dirt both ways, like one of our old-fashioned shovel plows, although not by any means so good, as this picture will show.



When they get it scratched over, they sow the seed broadcast, as we used to do before the day of the drill. To cover it, they trot their camels, sheep, goats and other animals over the sowed ground, and it grows up and heads out, as it does here, without any further attention until it is headed, when it is big enough to steal, and has to be watched day and night to keep the neighbors from taking it off by stealth; and the people and the animals tread it down, cutting across the fields, both ways. The fences, wide and tall enough at places, have great gaps in them through which anybody can ride or walk. Our party of sixteen persons, on horseback, galloped right over a wheat field several miles long, when it was headed out and in the milk, and nobody seemed to care, and our guide said to me that it was the "custom of the country."

They raise quantities of grapes there. You will see a field covered over with what look like walking-sticks, in rows some fifteen feet apart, both ways, and about four feet long. Look closer and you will see that one end of each of these sticks is fast in the ground. These are the grapevines. When they begin to bud and

blossom they take a forked stick some three feet long and prop up the loose end with it, and the grapes are thus kept out of the dirt. Foxes burrow under the stone walls and steal the grapes before they are ripe, and two-legged foxes, in abundance, forage on them whenever they get a chance. A circular tower twenty-five feet high, is built in the center of the vineyards, hollow in the middle and with a spiral staircase built inside, and a man or boy is kept on top of it, day and night, from the time the grapes are big enough to steal until they are all gathered in. They make them into wine, which everybody drinks there instead of water. One man said he had a prejudice against water ever since he had heard of so many people being drowned by it in the flood.

All the implements which are used for tilling the soil are carried out to the fields in the morning and brought back at night and put inside the walls of their towns, and all the people go in, too, to keep from being robbed of everything they have, even the clothes off their backs. The women do the hardest part of the work all over that country. I met a man riding a donkey into Jerusalem, smoking a long pipe, and his wife trudging along behind him with a baby strapped on her back and carrying a plow and harrow with which they had been tending the crop. The men always have the lightest part of the work to do. I saw a man holding the plow handle who had a cow and his wife hitched up and pulling the plow for him. In this way, and sometimes with little oxen, or a camel, they will manage to scratch over a quarter of an acre a day, which is counted a day's work. Wheat is harvested there in May, and barley a month earlier. They cut it with a sickle, if lucky enough to have a sickle, and, if not, they pull it up by the roots and then sheaf and shock it much as we do, until it goes through the sweating process. They haul it to the threshing floors on the queerest-looking carts you ever saw. They have two solid wooden wheels with four iron rings fixed in staples on the outside of each wheel, which rattle against the wheels as they roll, and make a tremendous racket. In this way the boss can tell when the hands are at work and when they are laying off.



The wheels of these wagons are fastened tight upon the axletree, which turns around as the wheel does.

They select a raised spot for a threshing floor, so the water will drain off well, and spread clay on it and roll it hard and let the sun dry it; then, having spread the sheaves on the floor, they have the same animals thresh it out that trod the seed in, six months before.

The grain is winnowed by tossing shovelfuls of it into the air on a windy day. They use only wooden shovels and forks to handle it with.

When the grain is cleaned by the wind blowing out the dirt, and leaving the little stones in, they have the women grind it on a pair of stones like this picture.

Of course the grain is greatly diminished in quantity and damaged in quality by such slouchy farming and handling. But it sustains another loss, which, if any of you think of settling in that country to raise wheat, you should bring into the calculation; and that is the taxes. The tax collector stands by when the winnowing is going on, and takes a tenth of the cleaned grain for the taxes. Now, this would not be so bad if it ended here. But the collectors are a set of rascals, banded together to cheat the farmers, and aided by the Government, through oppressive laws and dishonest administration. This is the way they do it.

When the Sultan turns his attention to the financial affairs of the Empire, he gets his Secretary of the Treasury to calculate how much money will be needed for the expenses of the Government for the coming year. Then he goes to the rich bankers in Constantinople and gets them to advance it in bulk at the beginning of the year. Now, you all know how much more you will spend when you have a pocket full than if you had to make a note, or draw a check, or borrow it of somebody. So the sturdy old spendthrift runs through with a whole year's allowance in less than six months, and has to "skin" along the rest of the year as best he can. But those dozen Constantinopolitan bankers did not loan him that money for nothing! Oh, no! He gave them in exchange for it the privilege of collecting the taxes of the whole Empire for the ensuing year. This they farm out, or underlet to a hundred persons throughout the realm; and these to five hundred, and the latter to two or three thousand, until, finally there will be a collector for almost every acre; and they come swooping down like a swarm of Egyptian

locusts, and take everything they can lay their hands upon. And so the farmers, in self protection, try to hide their products. I saw them harvesting wheat when in the milk, and asked my dragoman what they did that for. He said they were going to bury it so the tax-gatherer would not seize it. The Government, as I have said, helps these harpies by appropriate legislation, for it strictly orders the farmers not to thresh their grain before the collectors are ready; and this means more extortion, because these officers are notoriously open to bribery, the whole system being the most corrupt upon the face of the earth.

Then, when you consider that their laws are arbitrary and shifting, depending upon the whim of a single man, while ours are stable and reliable, enacted by ourselves through our chosen representatives; and when you think of their abominable tilth as against our thorough and scientific methods and processes; when you contrast their plows with ours, and their sickle or plucking up by the roots, with a McCormick's reaper, and their treading out and winnowing with a modern threshing machine; and their little grinding stones with one of our flouring mills, and their robber tax collectors, who hound the farmer down and take from him all they can find, with our gentlemanly officers, whom we hunt down and settle with; and when you think of a good many other things I could remind you of, if I wasn't afraid of your secretary, who has limited me to twenty minutes, you'll probably conclude, as I did, that *Indiana* is a good enough country for any man to live and farm and die and be buried in, when it comes to that.

THE PROFITS AND PLEASURES OF PROFESSIONAL AND FARM LIFE COMPARED.

BY JUDGE JOHN V. HADLEY, DANVILLE.

Whether this assignment to me was suggested by the old adage, "that a jack of all trades is master of none," is a matter of no consequence to my audience and what the committee thought about it, or what I think about it, can be of no interest or value to you except so far as my course in life may illustrate the truth of the proposition. However this may be, however strong the arguments in favor of a concentration of effort, and however strong a diversity of employment, I appear before you to confront the fact, that twenty years of my life have been given to farming, ten years exclusively to the practice of law, and for the last ten years I have presided over a sort of co-partnership between law and agriculture, and am therefore in some degree qualified to speak upon the profits and pleasures of the two departments of labor.

The same general economic rule by which the profits of professional labor are determined, determine also the profits of farming. There is no mystery about it. There is no advantage in one over the other.

The popular belief among non-professional people that the wage of professional labor is large and easily earned, is just as erroneous as the popular belief among professional people, that farming, with its variety and rapidly changing duties, is a sort of general picnic, with large remuneration for the labor actually performed.

The truth is that the ground and source of all honorable success is industry, intelligence, integrity and perseverance. These four elements combined in the same person and supported by health and strength, will succeed in any vocation in this favored country of ours.

The opinion we entertain of the character of each others' business results from the point of view from which we look at each other. Professional people will drive out into the country in the spring or summer—and they rarely go at any other time—and see the forests and fields clothed in verdure, singing birds frolic-ing about, wild flowers springing up everywhere, and the scene is so exhilarating and enchanting that they become oblivious to the arduous realities of farm life. While the farmer will go to town and see the professional man about his duties, so entirely freed from manual labor and going on with so much apparent ease and comfort to himself, and he will see the doctor receive \$25 for a few calls, or a lawyer \$25 for what appears to be a day's work, and he goes home in amazement at the inequalities of human labor. The value of a good cow earned in a single day without capital or obvious work. The difficulty with my farmer friend is that

he does not see the whole case. What the people see of the professional man is merely the dress parade of his business, and particularly is this true of the lawyer. His work in the court house is a very small part of the whole. The office, with his books and briefs, is his workshop, and I affirm that the lawyer with the largest clientage and the most handsome income is the hardest worked man in the community. The fact is, that at times when engaged in heavy trials, he works twenty-four hours a day.

The lawyer who wins becomes devoted to the cause of his client, so earnest and eager for success, that disappointment becomes as painful to him as to his client, and this eagerness and enthusiasm keeps him strung up from the moment he meets his antagonist in the court room. It is not infrequent that in trials the testimony of 50 or 75 witnesses, is given to the several facts bearing upon the point in controversy. In some respects all these witnesses will differ in what they say, and yet the attorney, who will be required to proceed with the argument as soon as the evidence is closed, will be expected to remember the testimony of every witness who has testified. He is not only expected to remember it, but he should, in fact, remember it, and should have it so classified and arranged in his mind as to be able, at any instant, to call up all the testimony and circumstances in support, or in attack, of any fact in the line of the issue. Such a trial will last six or eight days. On the first day he must remember the points made by the opening statement of the other side and what evidence has been given during the day. On the second day he must hold fast to all that was delivered on the first and augment it with what was delivered on the second, and so on day by day, adding to the load his mind must carry and assimilate. Add to this from two to four hours in the office after supper counseling with clients, talking with witnesses, preparing pleadings, plowing through volume after volume for authority, and in the last days of such trial you may imagine such attorney going home at ten or twelve o'clock at night, his mind in a whirl, his strength exhausted and his appetite gone. In bed he endeavors to go to sleep, but there is the case. He tries to count himself to sleep and he counts 100, but the case is still clinging to him. Then he begins at 100 and counts backwards to one, to find the case there to receive him. A horrid night of unrest. The body exhausted, lies motionless in a comatose state, with the mind never so active, all night through, springing from one proposition to another, from the testimony of one witness to another, suggesting, arguing, contending and now and then discovering and retaining a really valuable principle.

A lawyer thus overwhelmed with his case can no more free himself from it when he goes home than he can free himself from the consequences of sin, and it is only the verdict of the jury that enables him to lay it down, and often this process is very painful to him.

The farmer has no such labors, and if such labor was as unrelenting to the lawyer as is the usual avocation of the farmer to him, there is not an attorney in the State so strong as to be able to stand up under the strain for five years.

Such cases are expected to, and usually do bring good fees, and it is the number of these arduous cases that draw proportionately upon the life and strength of

the attorney, and the fees arising therefrom that constitute the visible profits of the business. The little cases and office work are quite satisfactory if they pay the expenses of the office and living.

THE PROFITS OF A BUSINESS

are best determined by what a man has left at the end of the year, and it is still more satisfactorily determined by what he has laid up at the end of ten years. It may be assumed that the average lawyer having spent two years at study, his education and library have cost him \$3,000, and these are his stock in trade. Take an equal number of farmers with equal intelligence, each with \$3,000 capital, and note the results of ten years of business, and in my judgement the comparison will be unfavorable to the lawyers—unfavorable to the lawyers of this county, even—and I will be pardoned in saying that there are few, if any other counties in the State, wherein the lawyers as a class, are in so good pecuniary condition. This fact I know from law book sellers who have the financial standing of every lawyer in the State, and who have told me that there is not an attorney in Danville to whom they will hesitate to send a book upon order without the money. It is not that the lawyers here have made more money, but that they have had better habits of economy and thrift.

The profits of farming are now at low ebb, but the same may be said with equal force of the professions. Even in these slow times the people will not get sick to the satisfaction of the doctors. It is generally believed that when times are closest with general business the harvest is richest for the lawyers, but it is wholly a mistake. All sorts of business must prosper or suffer together. The farms are

THE GREAT INDUSTRIAL THERMOMETERS,

and when the farmer is making money so is the lawyer; and when the farmer is running behind you may assuredly note the lawyer fighting the wolf from his door. It is safe, therefore, to say of men of the same capability and adaptability that he who succeeds at the law would also have succeeded on the farm, and he who has succeeded on the farm would also have succeeded at the law. Success and profits in both avocations are predicated upon hard work and patient perseverance, guided by intelligence and the golden rule.

THE PLEASURES OF THE TWO AVOCATIONS

depend very much upon the temperament of the man. The passive, emotional and poetic nature should never espouse a profession. The physician is constantly brought into contact with hard and disagreeable duties; the exposure of travel, the distress of suffering and of friends in death and dangerous sickness. None but a phlegmatic temperament can hold a steady hand or quick heart in all conditions under which the physician is placed, while it is safe to assert that none but an aggressive, combative disposition can find either pleasure or contentment at the bar. At the bar the man's moral sense lives on contention, and being constantly mixed

up with other people's quarrels, sees only the bad side of human nature, and year in and year out, feeding upon quarrels and deceits and desires for vengeance, the moral perceptions must be very strong to maintain these supremacies, and if the charge be just that lawyers, as a class, are remiss in their Christian and high moral duties, their delinquencies should not be attributed to a natural degeneracy, but to the feature of their business to which I have alluded. The farmer, on the other hand,

SEES ONLY THE BRIGHT SIDE

of human nature. If a just man himself, he will rarely, if ever, have a quarrel, and seldom witnesses one by others, and, his duties being such as to generally keep him at home in the society of his own family, when he does meet neighbors at the threshing, or beef club, or church, or at town, they will all be in a good humor, and the contact will be pleasurable and inspiring.

The pleasures of either business are measured largely by the degree of observance of nature's law of order. Nature abhors a sloven anywhere, and no place more than in the office or on the farm. The farmer goes to town to hire a lawyer, and being a stranger he calls at an attorney's office. If he finds the floor uncarpeted, dirty and soiled by tobacco, a few old broken chairs, a whittled table and a few greasy books scattered around, he would not hire that attorney to defend a provoke case, and ought not to. The inexorable law of decency and order requires that every class of employment shall be conducted with a system and style commensurate with the character of the business to succeed, and neglect of this law is nowhere more widespread than among the farmers. Neglect and disorder are on every hand. If farmers would fix up their farms, paint their buildings, build up and straighten their fences, take out the bushes and briars and stumps, under-drain their fields, clean up their pastures and lots, keep their implements in good repair and their work animals in good flesh and training, their profits would be increased and pleasures augmented tenfold. Even the sloven is

HAPPIER AMID PLEASANT SURROUNDINGS

than amid the disorder and confusion he creates about him. Another pleasurable advantage the farmer has is his ability to free himself from his business. When night comes and he turns his face toward the house, his business is left behind, and having fed his stock and eaten his supper and spent an hour of pleasant conversation with his family, he goes to bed, and after a night of restful, blissful sleep, he gets up in the morning bright and invigorated for another day; while the lawyer, who for the time being is the common drudge of his client, has no time for his family, and little time for his bed, and, getting up in the morning with tired body, aching head and throbbing temple, goes back to his post of struggle and turmoil.

I love the country for its peace and quiet. I love the green pastures with their lazy, lounging herds. I love to see the mellow, moist, invigorating earth fall caressingly about the tender plants of corn. I love to hear the jocund music of the reaper as it gathers into sheaves the golden grain; but, more than all, I love

THE PRINCELY INDEPENDENCE OF THE FARM,

where there is no fawning for favors, no scheming for jobs, and where the first of the flocks and fields belong to the family of the master. I, too, love my profession; its social and literary advantage, its elegant ease when off duty; and life is not a failure, if for a single day to stand before a jury of the country and successfully plead for the redress of a great wrong.

The fruit is sweetest that grows highest up and costs the greatest effort to obtain; so the ecstatic pleasure that comes to the attorney with a favorable verdict after a long and hard struggle is never known or felt by the farmer.

I conclude, to the young men—if there are any present hesitating what to do—there are golden opportunities everywhere, and there are hard lines and disagreeable duties everywhere. If you want to get rich, keep out of the law. If you want to get money without earning it, keep out of the law. The fluctuations in values give you better promise on the farm. You may find pleasure and compensation and struggle wherever you go, but, turn where you will, remember always "that the man who works is the man who wins."

SILK CULTURE.

BY MRS. CATHERINE MICK, NORTH VERNON, IND.

In writing this paper I want it distinctly understood that I do not recommend silk culture as yet, to all farmers as a side branch of agriculture, or to others that have other means to make a living, for it is too early yet in this country to compete with Chinese labor at starving wages. But to those that have the leisure time, and wish to earn an honest penny, such as are on poor farms, widows and homes of old, poor people, such as have little or nothing to do among farmers and villagers during June and July, or poor families where there are small or growing children not otherwise engaged, provided, first, that they have plenty of room in the house; second, plenty of osage orange hedge fences near, or their equivalent, the Russian and White Mulberry trees, and third, their whole undivided time.

The main point is plenty of food for the worms, for they are great eaters and hard to attend to. They will consume from a dozen leaves to two or three times that amount a day, when first hatched, to 200 pounds of leaves a day when near maturity for 100,000 worms. If you give them all they will eat day and night, 100,000 worms will consume 400 pounds of leaves. However, none should feel scared at these figures, as few will be able to attend to that many at one time, and a quarter, half or a mile hedge row will furnish a large amount of forage leaves if the hedge is old and on rich soil. Though Russian mulberry trees have no thorns, the leaves are much larger, and when time is pressing one does not need to pull the leaves from the twigs to feed the worms with, or clip the point of thorns off as you do with the osage thorn; nor is the outlay for material very great, and it is within the reach of all. A few yards of mosquito bars to make feeding trays for the newly hatched worms to crawl through to reach their food on top, some old newspapers, a few dimes worth out of which to make perforated feeding trays with, some lumber or wide clapboards for shelvings for the trays to rest on and house room to feed your worms in. The first year we raised ours in the living room, but the smell of the rotted leaves is an odor not relished by every one. Still one must be able to have a room or rooms with a stove, as an even temperature should be kept at all times, and this can only be done by artificial heat. A thermometer is therefore absolutely necessary, and need not be very costly—say fifty cents—and this should last a life time.

I would advise new beginners to commence with but a few thousand eggs, say about one-tenth ounce, as a larger amount might become an elephant on their hand not looked for. All new beginners can get all the information in a book from the Department of Agriculture, Washington, D. C.; also, one-eighth of an ounce of eggs free for the asking. Hence it would be useless to describe here how to feed them. We were often asked: "Why can not you put the worms on the hedge

and let them feed themselves?" That would do very well but for two things—first, depredations of birds, and second, cold, chilly rains that would chill the life out of them. The former could be remedied by fish nettings stretched above and around the hedge row or the plantation, but the cold, chilly rains could not be so easily remedied. Hence open air silk culture, I am afraid, will never become a success in Indiana. But in buildings we have the whole thing under control, needing only patience and care. As for the income, of course this is not much, and depends very much on how many worms one can raise successfully, and varies according to the price for cocoons. This year it was \$1.15 per pound for No. 1 cocoons; \$1.00 for No. 2; 75 cents for No. 3, or less than that. If I remember right it takes about 1,000 to 1,200 cocoons (dried) to make one pound, and it is claimed that two persons could feed (?) 50,000 worms. That would take about sixty days' attention if fed on osage orange leaves, and about forty days on white and Russian mulberry leaves. So you see the income depends on the number of thousands of bugs one can raise successfully. It is a small sum, but it comes in a lump, and is far better than if the person or persons had laid idle during that time. Thus many can make a little pin money, and it is a new industry that will reach a class of people that have hitherto remained idle or earned nothing. And that much money would flow as hard cash into the State; besides, it is quite a curiosity to new beginners. We had almost daily visitors to see the bugs; one time a school paid us a visit, and one can learn many of the habits of the silk worm, of which space forbids me to speak now.

HOME, MIND AND SOCIAL INTERESTS.*

MISS IDA F. RICHARDSON, INDIANAPOLIS.

As our "standing committees" have kept us well posted concerning the condition of crops, orchards, gardens, etc., the home-keepers will naturally interrogate "What is the effect of the products of these upon the persons by whom they are consumed?"

As the different ingredients of which our daily aliment is composed become essential constituents of the body itself, and the preparation of diet occupies much of the thought and time of the home-keepers, it may not be amiss to premise this series of reports with some gleanings of chemical researches which may aid in the selection of food suited to the needs of the inmates of home.

Searcher of truth for the welfare of the human race, report that cereals, fruits, eggs, vegetables and meats may be so taken into the human system as to produce either a healthy or sickly state of the body.

Cogent argument, practical illustration, and individual experience also teach that mental actions are conditioned by the matter which, by the nutriment, is conveyed to the brain.

Diet has an essential connection with moral and mental development.

In this grand State of Indiana, where agriculture, horticulture and thriving flocks flourish, we may select from the products of these all important representatives of nutriment.

Meat, bread and leguminous seeds greatly excel in nutritious aliments the edible roots, vegetables and fruits.

The difference in composition which exists amongst the seeds of the cerealia, is great. The nutritiveness of the different kinds of grain is dependent upon the comparative proportion of gluten, for in all of them the constituents of fat are present in abundance. Wheat, rye, oats, barley, rice and maize form a series in which wheat takes the highest, and maize the lowest place with respect to nutritiveness.

In rice and maize there is scarcely to be found one-seventh of the amount of gluten contained in the wheat. A corresponding proportion of nutritiveness consequently exists in the bread prepared of these different kinds of grain.

Chemical knowledge thus justifies the old usage which, to all other kinds prefers wheat and rye bread.

As our flesh in a large measure consists of chloride of potassium, phosphate of potash, and fibrine, an abundance of these constituents in the blood must be to the benefit of our muscles. Under a predominant, and still more under an exclusive animal diet, the fibrine passes in greater quantity into the blood. The natural

* Read before the Marion County Agricultural Society.

result of this is great vigor of muscles, as may be illustrated by the strong muscular structure and fiery movements of the Indian tribes in North and South America, who snatch a livelihood from the chase. Again it is shown in the superiority of an English laborer, who is strengthened by his roast beef, over an Italian lazarene, whose predominant vegetable diet explains in great measure his inclination to idleness.

That kind of flesh is most nutritious which contains a sufficient proportion of fat and salts to restore to the human body the inorganic constituents of the excretions and the transformed fats. That kind of flesh, however, which contains the albuminous matter in the greatest abundance is to be considered the most nutritious. Venison and beef are, therefore, more nutritious than veal, and veal more nutritious than fish. Pigeons and fowls, however, surpass beef in nutritiveness, being not inferior in their proportion of albuminous matters, but superior in digestibility. Pork, also, is less nutritious than beef, from the two-fold reason of its possessing fewer albuminous compounds, and of being on account of its preponderant quantity of fat, less digestible.

When fibrine is abundant in the blood, the heart, being a tissue of muscular fibres, is more fully nourished; the activity of the circulation is consequently increased. Meat furnishes what is wanting in vegetables, and vegetables dilute what meat contains in too great abundance.

Fruits are most wholesome, prevent or remove constipation, and act like a charm upon body and mind. Apples and berries, cherries and plums, apricots and peaches, melons and cucumbers, with all other similar fruits, dissolve the albuminous matter, and exercise a cooling influence upon the blood. Pears contain iron, one of the most important agencies for carrying forward the life process. Grapes probably stand at the head of all fruits. They thin the blood, and also enrich it, thus doubly improving it. They can be eaten so as to produce almost any physiological effect desired. Eaten with the skins they relieve constipation and promote evacuation; while ejecting the skins, after chewing them well so as to extract the part immediately under them, causes astringency. Fevers are mitigated and often broken up by their use. They should be made to constitute an important part of the human diet.

While fruits are more nutritious than vegetables, and less so than potatoes, they have a great advantage over the latter in not overloading the blood with fat.

Vegetables, by themselves, convey very little nutriment to the blood, as may be seen in the feeble blood of the inhabitants of the tropics who live exclusively upon herbs. Vegetables are of service, first in the digestive canal, by dissolving the albuminous substances of the meat, and afterwards in the blood itself, by keeping the albumen and fibrine in a liquified state. From a vegetable diet alone, the muscles become powerless, and a smaller quantity of nutriment is conveyed to the brain, hence, results an irresolute will, and a cowardly relinquishment of independence, as illustrated in the timid and slavish Hindoos, and other inhabitants of the tropics, who feed almost exclusively on vegetables. So we learn diet effects produced upon man determine the commerce and the character of the people, as well as the individual.

Vegetables which grow below ground, as potatoes, turnips, onions, radishes, beets, etc., are said to be positive, and, therefore, grow from the sun, and are suitable as food for those who are highly nervous. They support and increase excitability, hence, the fondness of the Irish for potatoes. Those rather passive than positive, cool almost to tameness, require negative food, or that which grows above ground, reaching toward the sun, as lettuce, cucumbers, cabbages, etc. Consuming tuberos or positive food would tone them up, as eating above-ground or negative food quiets and soothes those too excitable.

The time limited to this report forbids further consideration of this important subject to-day.

Knowing that persons at distinct ages of life, at different seasons of the year, in unlike occupations, require their suitable food, the conscientious, enlightened mother, with due regard to the season, age and occupation, will have each member of the household served with wholesome, nutritious food, prepared in most easily digested forms, at intervals which allow the digestive organs suitable periods of rest, to promote elasticity of muscle, acuteness of the senses and clearness of thought. She aims to have each body a fit instrument for the operation of the mind. She selects, prepares and serves such food to be consumed at home as will give the brain healthy activity, thus advancing it in intelligence and judgment, putting its possessor in a state to best serve the family, the country, the church and thus the Lord.

The family is daily being served with food which as surely produces its results upon the human system as does the drugs of the physician.

The secluded home-keepers prepare meals in their kitchen laboratories—other aid, justly considered—which consumed, have results so wonderful, so far-reaching, so potent for good or ill, that we are filled with awe when we contemplate the possibilities of their control over health, mind and activity, morals, commerce and religion. So the importance of knowledge on this subject is manifest. While there is no danger that the laws of regular attraction, upon which the nutrition of the tissues is dependent, should allow the excessive supply of a single constituent, yet the function suffers if this constituent be present in too small a proportion.

A common tie unites matter, form and function. The composition, the form, and the activity of the organs of our body, form a chain, of which no link can be affected without a simultaneous alteration of the other two. There can be no activity without continual transformation in the composition—without a perpetual becoming and ceasing to be.

Let us seek to understand this connection, and

Nourish the body that it may be
A fit abode for the immortal mind,
Exalt their use and eternity
Will prove our worth to humankind.

As food consumed has its decided effect upon its consumers so the appearance of a home has much to do with the habits, taste, and character of its inmates.

Is the house old, the ceilings low, the windows small and the purse insufficient to build a new one? By the help of art please the fancy by having it appear otherwise, choose for the dark room a warm, tinted paper, as nearly resembling sun-

light as possible. Carry the tint upon the ceilings, broken here and there by the insertion of a cheery border, dome it with a lighter tone. Set the window-curtains high, add a lambrequin of pleasing effect to both windows and mantel. Train a water-ivy or sweet-potato vine over the picture wires; keep a bright flower in the vase; fill the rooms with fragrance and the window with beauty by having on the sill a hollowed knot containing a blooming heliotrope and mignonette. The shell of a cocoanut—sprout-hole down—filled with ferns, furnishes a hanging-basket of attractive appearance. Jersey's polished horn suspended with a bright ribbon adds a receptacle for choice grasses. Geological specimens and a couple of etched lichens may serve as mantel ornaments. On the table a microscope and a tumbler containing a cabbage-worm, for instance, may serve to awaken the interest and inquiry of the children in studies of natural history. With a little of its plant food to sustain it, through the tumbler the children may watch the wonderful transformations of the insects they rear, and a habit of observation and investigation be stimulated. An aquarium added contributes to the attractiveness of the room, and to the delight and improvement of the children. A bracket for the opera glass places the instrument within reach when a bird, or the bees are to be studied at a moment's notice.

The old-fashioned, broad-framed mirror, painted a desirable hue, sprinkled while wet with "flock," the same color, transforms its appearance to velvet. Select a few peafowl feathers of graceful curve and place back of it, and you have a thing of beauty as well as of use.

Do you need a place to keep memoranda? Decorate one side of a slate, gild the frame, and hang your picture where its reverse side, undecorated, may be handy when needed. Do you need a screen for the lamp in sickness? Decorate the outside of a double slate, gild the frame with bronze powder, and with the physician's instructions written on the inside for reference, stand it round the lamp, and your object is obtained. Would the aged grandmother like a footstool? From the store obtain a wooden box with lid, cover it with scraps of carpet, put it on castors and utilize the inside as a receptacle for soft linen rags, lint, roll of adhesive plaster, articles ready for use in case of an accident. For a cabinet for the young folks, obtain one of Clark's O. N. T. spool cases from a dry goods store, cover the lettering with goods neatly pasted over it, and its drawers will answer the purpose nicely. The case also serves well as a pedestal for a large vase, or one of Rodger's statuettes. One of its drawers should be a receptacle for scrap pictures cut from illustrated papers, to be pasted in the scrap book on rainy days. I utilize three drawers of mine for specimens, one for fancy work patterns, one for art studies, and one for sheet music. For a rug for the floor, tan, line, and then comb out the wool of a sheep skin. "Drawn in" rugs may be made, hard to detect from real Persian.

To these suggestions, add the fancies of the decorator, and the attachment for the old home will be strengthened by its improved appearance, and more happiness is likely to be enjoyed there than in one of more stately proportions. It is a notable fact, that from quaint old homesteads have gone forth those who have become the great men of our nation.

The habit of reading aloud during the evening, some book likely to interest all, is a great stimulator of thought, and source of information, as well as a social feature of the home held dear to every heart of its inmates.

Those who appear to have little taste for reading are often awakened from indifference to one of marked interest. Such a case occurred under my own observation within a few years past. A young man came to work for us who was so bashful that for a time he evaded all of our efforts to induce him to join our family group during the evening, at which time one of the family generally read aloud; he preferred the barn, and the stock for company. During meals we often discussed what had been read. Gradually he began to listen, and linger to hear. When nearly a year had passed, we were occasionally favored by his remaining to listen to the sequel of some story in which he had become interested, and being called upon to go to the barn for something to accommodate a neighbor while I was reading Tourgee's "Bricks Without Straw," to the surprise of all, he requested me to please wait until he returned before reading any more. Soon he had subscribed for a paper, "The Farm, Field and Stockman," and now, his leisure minutes are employed in reading something to improve his mind.

It has been truly deemed a great refreshment to come back from the aridity and monotony of daily toil to the calm air of the study and pick up the thread of scientific, philosophic or literary discourse where it was dropped on yesterday, and forget for a time the dusty highway, the miscellaneous wayfares thereon, the jangle and discord, and calm one's mind in companionship with minds that dwell in eternal calm.

The mother who has formed in her children a taste for reading, places a barrier between them and Satan's allurements. She may send her son to the great city without misgiving. He will gravitate to the lecture room, the library, the society of the pure and intelligent, and slowly but surely his soul will be lifted to higher levels of thought, feeling and volition.

Make home your ideal comfort and peace;
Its harmonies strengthen, its blessings increase;
Its influence spread like halos of light
Round souls that are tried by doubt's killing blight.

Nourish the tendrils that reach to entwine
Round hearts found congenial in virtue's sweet shrine.
Homes, where the magnet of true mother-love
Attracts hungry hearts, with strength from above.

Fill every mind with cheer that delights,
Attracts from the wrong and wins to the right;
Feast them with thoughts of the noble and true;
Inspire them with love-like ways to pursue.

Strengthen their bodies and culture the mind;
Socially lead them among the refined;
And when life is o'er, and results may be seen,
Great joy will be thine, true Mother—Home's Queen.

PLOWING.

BY A PRACTICAL FARMER.*

In selecting a subject for consideration we are overwhelmed with the great amount and variety of subject matter to interest the agriculturist, and the difficulty of doing justice to many of the leading features in farm operations in a paper of reasonable length. It is gratifying to observe the rapid strides in the institute work, and the really excellent literature developed and brought out by the management of the series of institutes. So much in contrast with the experience of but a few years ago, when it required the presence of the highest official of the State and a brass band to bring out a respectable audience.

There is no mistaking the fact that the farmers are aroused to the necessity of asserting their rights and giving more attention to matters that will place them in the front rank in governmental affairs.

How to lay off ground for plowing to advantage is a matter seldom referred to in agricultural literature, and no rules have been laid down in that respect to economize time and labor. We have often seen fields plowed by commencing on the outside clean around, closing up with short furrows in the middle of the field, and this repeated until a ridge is formed next to the fence that is very objectionable for harvesting machines and in other ways.

A good plan is to lay out a system of plowing that will do to work by from year to year, which has proven satisfactory where tried. A light furrow should be made around the field nine or ten feet from the fence; this should be the last part of the field plowed, thus leaving a roadway to pass on going to and from with plow teams and any hauling of plows or manure that may be required. The first plowing of this roadway, turn inward, and reverse the next season, thus keeping ground comparatively level. The field should be laid out in not less than four lands, according to size and shape, and each season commence plowing in what is known as the middle furrow, thus finishing the land on the back-up of the previous year. Where it can be done on comparatively level fields, the plowing should be done across or reversed each season, a set of lands being marked out for both ways of the field. Of course where ground is sideling the plowing must be as much as possible with the lay of the land, as no plow will do effectual work turning up hill. However, such land should be plowed as seldom as possible, being liable to wash and destroy its fertility.

The stereotyped advice that you must plow deep, should be taken with a few grains of allowance, as it depends on the nature of the ground whether the plow should be set deep, as the writer almost ruined a crop of corn by turning up three or four inches of the subsoil that had never been disturbed and putting the virgin

* NOTE—Written by request for Institute work.

soil that was thoroughly acclimated at the bottom of the furrows. We favor deep plowing in stiff soil, but it should be made by gradually mixing, and not turn up more than an inch or so of subsoil at each plowing.

Bottom lands are sometimes injured by reaching into sand or gravel in places, which should be avoided.

The writer had an experience to prove this statement. A neighbor across the fence plowed four inches deep, while we plowed eight inches; the neighbor's corn grew better and made the best crop, and we have seen this effect produced more than once.

The subsoil plow is a good thing on stiff soils, but keep it out of your bottom lands, is the advice of one who has tried it.

Another important advantage in properly laying off the field to be plowed, especially wheat ground, is the hauling out of the manure after breaking the ground, by leaving the road on the out-edge of the field, and a strip wide enough for a roadway, unbroken between each plow land. Thus giving a solid road for reaching the distant parts of the field. This leads us to the subject of manuring in connection with plowing, as I am convinced, by experience, that one load of manure spread on top of plowed land and worked in is of as much benefit to the crop sown as two loads plowed under. In the spring of the year it is often necessary to draw out long manure, which must be plowed under, but, as a rule, the manure pile should be thrown up, and allowed to rot until after harvest, when it is in better order to handle, lighter hauling on solid ground, and the manure on fall crops gives best returns. In plowing for fall seeding do not delay when harvest is over, but do your breaking, especially on stubble field, as soon as possible, and before the ground dries out. Keep the harrow off. If disposed to be cloddy, pass the roller over it soon after plowing, then get the manure on the plowed ground, after which harrow and roll. Stir with the cultivator as much and often as you choose, until time for seeding. Now let us go back to plowing again. Avoid plowing when too wet, except in very sandy ground, and keep the harrow off corn land. If disposed to be hard and cloddy, use the roller; this refers to rich bottoms, old fields, and upland, and not sod. If the land is very rough, use the harrow immediately before planting corn, but the secret of tending corn, and saving labor, is to be sure and pass the harrow over the corn before it is through the ground, thus giving it an equal start with the grass and weeds. I have again digressed, and will leave corn culture for another time.

GRASSES OF INDIANA.

BY PROF. JAMES TROOP, OF PURDUE UNIVERSITY.

No subject can be of more vital importance to the farmers of Indiana than the economical utilization of their fodder crops, since their success with live stock and in the dairy must be directly proportional to the economy of this utilization and depend for success or failure on the skill exercised in feeding. Careful inquiry and observation extending over the entire State forces the inevitable conclusion that as much nutriment in the form of fodder is wasted every year as actually finds its way into the digestive systems of the farm animals of the State.

The two great fodder crops necessarily considered in this connection are, hay and corn stover. Though perhaps both are equally worthy of consideration and the utilization of each equally capable of improvement.

It is the intention to devote special attention to the production, curing and feeding of hay during the coming season. That the results of the work may be most effective, however, it seems necessary that a preliminary discussion of the grasses of the State is called for. This does not purport to be a scientific treatise on the grasses of Indiana; the sole aim is to offer the farmers of the State the briefest possible description of every grass known to grow within our borders, together with the chief characteristics and relative value for feeding purposes of each, in the hope of placing the farmers in possession of such information as will enable them to determine for themselves the character and adaptations of grasses with which their experience may bring them in contact.

So far as possible the common names of these grasses have been given, and common names only find place, so far as such are known to exist. Recognizing the fact that plant determination by mere description is necessarily attended by serious difficulties, a large number of illustrations have been utilized as conveying the most perfect impression possible of the actual appearance of the grasses discussed. These illustrations have been obtained from the Botanical Division of the United States Department of Agriculture.

So far as the actual importance of the work may become to the agricultural interests of the State, the relations existing between tilled land and grass land in the State must be pertinent. The area of tilled land in Indiana is 56.4 per cent. of the area of the State, while the grass land area is 11.8 per cent., the average for the entire United States being respectively 41.6 per cent. and 11.5 per cent. The ratio existing between these two varieties of farm land is, for Indiana, as 1 of grass land to 5.4 of tilled land, and for the entire country, 1 of grass to 3.7 of tilled

land—figures showing conclusively that Indiana can lay small claims at present toward either a grazing, stock or dairy preëminence, and that she falls far short of producing her best proportion of the grass of the country and fails in maintaining a just or most profitable relation between these two staple divisions of farm lands. Indeed, Indiana ranks in the second series of States in the production of grass, and in the third series in average value of milch cows and live stock, facts which must possess a definite relation to the proportion existing between grass product and area of tilled lands, and enforcing the proverb, "the more grass the more stock, the more stock the more manure, the more manure the more crops."

Probably no family of plants plays so important a part in the economy of the farm as the *Gramineæ* or grass family, furnishing as it does all our wheat, oats, rye, barley, corn, rice, sorghum, broom-corn, sugar-cane, bamboo and the greater part of our hay. It is also true that, aside from the grains, very little is known by the general public concerning the different genera and species which make up this family. On too many farms, not only in this, but in every other State, "a grass is a grass," and timothy, blue-grass and possibly red-top complete the list of those which are really known. The present bulletin, therefore, is confined strictly to a general description of the grasses proper found growing in this State, giving such information concerning the value and habits of growth of the different species as will be of interest to the general farmer and stock raiser.

In making the collections for the following list valuable aid has been received from many farmers throughout the State who have sent me specimens as they were found during the growing season. In this way the different portions of the State have been pretty well covered. In a few cases, too, where the specimens representing certain species were not found, I have drawn on the "Plants of Indiana" for information, as published by the editors of the *Botanical Gazette*. From my own collections, and those which have been sent me, I have been able to identify nearly thirty species and a number of varieties that have never been noted before as found in this State: and while quite confident that the list is very nearly complete, there may be a few omissions, which will be recorded if reported.

In the description of genera and species I have endeavored to avoid all minute details which would only tend to confuse rather than enlighten those who are not familiar with botanical terms, and give simply the principal points which will enable any observing farmer to recognize the different species with which he daily comes in contact.

By referring to plates 2 and 3, the terms *spike*, *panicle*, *spikelet* and *flower* will be made plain if they are not already so. In plate 2, 2 represents a spikelet containing a single flower shown at 3. Plate 3 represents a panicle.

The head of timothy represents a *spike*, while that of blue joint represents a *panicle*.

DESCRIPTIVE LIST.

LEERSIA, SWARTZ.

Two species belonging to this genus are found common in wet places. The spikelets are one-flowered, flat, somewhat crowded on a one-sided panicle; leaves and sheathes very rough, rendering them of little value as food for stock.

L. Virginica, Willd. (Cut grass).—Panicle slender, somewhat spreading when ripe, flowers somewhat hairy, greenish white; stem slender and much branched, three to four feet high, bearing bright green leaves with rough margins. Found in damp woods, pretty well scattered over the State. Aug., Sept.*

L. oryzoides, Swartz. (False rice).—Panicle branched and spreading; flowers rough and whitish; stem three to four feet high; leaves larger than the preceding, also rough on the margins. Also found common in wet places. July, Aug.

L. lenticularis, Michx. (White grass).—Panicle somewhat branched, flowers very flat with strong bristles; stem three to four feet high; leaves eight to ten inches long and a half inch wide. Found on low grounds along the lower Wabash and Ohio rivers. Aug.

ZIZANIA, L.

This is represented by a single species:

Z. aquatica, L. (Indian rice).—Panicle large and somewhat spreading, especially the lower branches, which bear staminate flowers, the upper branches bearing pistillate flowers and are more upright. Found in Gibson and Laporte counties, and doubtless elsewhere, growing along the banks of streams and lakes. It grows from five to twelve feet high, with long, broad leaves, which are relished by cattle. In the Northwest, where it grows abundantly, the grain is gathered by the Indians for food. Aug. (See Plate 1).

ALOPECURUS, L.

Spikelets one-flowered, crowded into a dense spike, each flower bearing a short awn. These two species are quite different in habit.

A. pratensis, L. (Meadow foxtail).—This is a native of Europe which has become quite well naturalized, and is found in nearly all parts of the State, growing in pastures and meadows, resembling timothy somewhat, but the spike is shorter and softer in texture, the stem not so tall, and it matures much earlier. Mr. J. S. Gould, in the Transactions of the New York State Agricultural Society for 1869, says: "It flourishes in May, nearly four weeks in advance of timothy, and is one of the earliest grasses to start in the spring. Pastures well covered with this grass will afford a full bite at least one week earlier than those which do not have it. It loves moist land." It will also do well on upland. May.

* The months named refer in each case to the time of flowering.

A. geniculatus, var. *aristolatus*, Monroe. (Wild foxtail).—This is much smaller than the previous species, and found growing in water and marshy places. It was sent us from the extreme southern portion of the State, but doubtless occurs in other localities. It is not considered of any special value except as a wet pasture grass. June.

PHLEUM, L.

Only one species is found here, and that is generally supposed to have been naturalized from Europe, but according to Dr. Vasey, it is indigenous in the mountain regions of New England, New York and the Rocky Mountains. Spikelets one flowered, in a dense spike.

P. pratense, L. (Timothy).—Also called Herd's grass in New England; is common everywhere, and well known by every one. It probably furnishes more hay than any other species in cultivation. July. (See Plate 2).

SPOROBOLIS, R. Br.

Spikelets one-flowered in a contracted or open panicle. Members of this genus are of a wiry texture, and, as a rule, of but little value for hay; but some of them furnish a considerable amount of pasturage.

S. heterolepsis, Gray.—Panicle loose, leaves long and thread-shaped, the lowest being as long as the stem (one to two feet). It is found in Gibson and adjoining counties; makes fair hay, but is not very productive. Aug.

S. cryptandrus, Gray.—Panicle spreading, its base being enclosed by the upper sheath; spikelets lead color; stem two to three feet high; leaves long and narrow, very hairy at the base of the blade. It is found in sandy fields in many parts of the State, and is eaten with great relish by cattle and sheep. On the dry sandy plains, west of the Mississippi, it is reported by Dr. Vasey to furnish a considerable share of the wild pasturage. Aug., Sept.

S. vaginæflorus, Torr.—Panicle small and spike-like, somewhat concealed by the sheath; stem six to twelve inches high, tufted and very leafy at the base. Common along the Ohio River in dry, sandy places. Sept.

S. asper, Kth.—Panicle contracted, partly enclosed by the sheath; stems two to four feet high; leaves short and narrow. This comes to us from the southwest part of the State, where it is common in dry, sandy fields; too coarse and rough to be of any special value. Sept.

AGROSTIS, L.

Out of thirty species and varieties belonging to this genus, Indiana possesses but six. They are all, however, of more or less value as food for stock. Spikelets one-flowered, in an open panicle.

A. vulgaris, With. (Red-top).—Panicle oblong, spreading, with a purplish color; stems usually upright one to two feet high. Found in all parts of the State; when mixed with other grasses it makes valuable hay, and as a combination for lawns, the seed of this mixed with blue-grass can hardly be excelled. June, July.

A. vulgaris, var. *alba*, L. (White bent grass).—Panicle closer and lighter in color than the species; stem two to three feet high. Also valuable for pasture or meadow; common. July.

A. elata, Trin.—Stem rather stout, two to three feet high; leaves flat and numerous; panicles spreading, spikelets crowded on the branches; light greenish color. Found in Tippecanoe County in moist woods; quite abundant late in autumn, where it adds considerably to late fall feed.

A. perennens, Tuck. (Thin grass).—Panicle delicate, and spreading when old; pale green; stem slender, decumbent at the base, one to two feet high; leaves numerous, long and narrow. Found in damp, shady places; quite common. July, August.

A. scabra, Willd. (Hair grass).—A very slender, delicate grass, with very loose, purplish panicle; spikelets small and scattering. Widely distributed, but of little value. June, July.

A. canina, L. (Brown bent-grass).—A low species, six to eighteen inches high, with a loose panicle, and spikelets of a purplish color. It varies greatly in different localities. Found occasionally in various parts of the State. July, Aug.

CINNA, L.

This genus is represented by a single species:

C. arundinacea, L. (Wood reed-grass).—As the name indicates, this is a tall, coarse grass, growing in wet woods and marshes, quite common. Spikelets one-flowered in an open panicle, six to twelve inches long, the flowers having a purplish tinge; leaves long and wide, furnishing a considerable quantity of very coarse, inferior fodder. July, August.

MUHLENBERGIA, Schreb.

Seven species are found in the State, four of which are more common in the southern half. Hitherto members of this genus have not been considered of much value, but recent experience and observation teach that some of them at least, in certain localities, will prove valuable both as pasture and meadow grasses. Spikelets one-flowered in rather contracted panicles.

M. sylvatica, T. & G.—Stem two to four feet high, much branched and spreading; panicle rather narrow. Common everywhere along river banks and moist woods. Aug., Sept.

PLATE 2.—*Phleum pratense*, L. (Timothy), 1, together with an enlarged spikelet and floral envelopes of same, 2 and 3.

M. Mexicana, Trin.—Stem much branched, two to three feet high. A common species, somewhat resembling the previous one, except the panicle is more contracted and the flowers crowded together in spike-like clusters. Found in moist woods and low places, and is readily eaten by cattle. Aug.

M. sobolifera, Trin.—A small species with an upright stem, and a slender, narrow panicle. Common. August.

M. capillaris, Beauv. (Hair-grass).—Stem simple, upright, two to three feet high; panicle ten to twelve inches long, very loose, spikelets of a purplish color, terminating long, slender, spreading branches; flowers bearing long awns. Found in sandy soil in Marion County, and occasionally in other localities. Aug., Sept.

M. diffusa, Schreb.—Stem slender, much branched, one to two feet high; leaves short and narrow; panicle rather slender and contracted; awn somewhat longer than the flower. Found common in dry woods; and, farther south, forms the main portion of the woods pasture. Aug., Sept.

M. Willdenovii, Trin.—A tall, upright, slender species, slightly branched; panicle contracted, loosely flowered; awn twice the length of the flower. Common in dry woods. Aug.

M. glomerata, Trin. (Drop-seed grass).—Stem two to three feet high, somewhat branched; leaves three to five inches long, broad and taper pointed; panicle contracted into a glomerate spike; flowers bearing a short awn. Found in marshes in the northern counties, where it forms a good portion of the marsh hay. Aug.

BRACHYELYTRUM, Beauv.

A single species represents this genus:

B. aristatum, Beauv.—Stem simple from creeping rootstalks, two to three feet high; leaves four to six inches long, one-half inch broad and tapering at both ends; panicle simple; spikelets few and one-flowered, with a sterile rudiment of a second, long-awned. Under natural conditions it does not grow thick enough to produce any considerable quantity of feed. Common in woods in all parts of the State. June.

DEYEUXIA, Clarion.

Two species are reported as occurring in the northern part of the State. Spikelets, one-flowered, with an abortive second flower.

D. Canadensis, Beauv. (Blue joint).—Stem three to six feet high, rather stout and leafy; panicle oblong, of a purplish tinge. Found in wet meadows, and when a thick stand can be had it is one of the most productive of marsh grasses, and is frequently cut for hay. July. (See Plate 3.)

D. Confinis, Nutt.—Stem two to three feet high, not so coarse as the previous species; leaves broad and tapering into a long point; panicle long, somewhat spreading at flowering time. Found in swamps in the northern counties. July.

AMMOPHILA, Host.

Also represented by a single species:

A. longifolia, Benth.—Stem three to five feet high, hairy, branching at the base; leaves one to two feet long; spikelets one-flowered, in an open panicle eight to twelve inches long. Found in counties bordering on Lake Michigan. Aug.

ORYZOPSIS, Michx.

Spikelets one-flowered in a narrow raceme or panicle.

O. melanocarpa, Muhl. (Mountain rice).—Stem two to three feet high; leaves eight to twelve inches long and a half-inch wide, tapering to a long slender point; panicle simple; flowers long-awned. Common in rocky woods. Aug.

O. asperifolia, Michx.—Stem, nine to eighteen inches high, with sheath bearing a very short blade; lower leaves long and narrow; panicle simple, few-flowered, awn two or three times the length of the flower. Grows in rich woods, especially northward. May.

ARISTIDA, L.

Of twenty-eight species and varieties belonging to this genus, only four have been found in this State, and these are of little or no economic value. They are mostly found farther west and south, in poorer soil than ours. They may all be recognized by their branching stems, narrow leaves, spikelets one-flowered in simple panicles or spikes, flowers awned and the awns divided into three branches, or apparently three-awned. Hence the name (Tripple-awned grass).

A. ramosissima, Engel.—Stem twelve to eighteen inches high, small and delicate, diffusely branched; spikelets scattered; the middle awn much longer than the outer two. Found in dry, sandy soil, South. Aug., Sept.

A. dichotoma, Michx. (Poverty grass).—Stems low, much branched; leaves short and narrow; spikelets more numerous than in the previous species, in short, narrow clusters; middle awn about the length of the flower. Also found in dry sandy places in the southern counties. Aug.

A. gracilis, Ell.—Stem eight to twelve inches high, with short, narrow leaves at the base; the spikelets scattered in a long, narrow panicle. Found growing in tufts in the southern counties. Aug., Sept.

A. oligantha, Michx.—Stem six to twenty inches high, growing in tufts; flowers scattered in a loose raceme, awns all alike, one and a half to three inches long. Found along the Ohio and lower Wabash rivers. Aug., Sept.

A. purpurascens, Poir.—Stem one to two feet high; leaves rather long from the base, involute; flowers in a long, spike-like panicle; awns much longer than the flower, the middle one an inch long. Common in the western part of the State. Aug., Sept.

SPARTINA, Schreb.

Spikelet one-flowered, much flattened latterly; spiked in two ranks, very rough; sheaths smooth with long, tough leaves.

S. cynosuroides, Willd.—Stem slender, two to six feet high; leaves narrow, two to four feet long, smooth except the margin; spikes scattered, spreading. Found in the northern counties, in wet places, but is too coarse and stout for hay unless cut very young. Aug.

CYNODON, Pers.

Spikelets one-flowered, with a short rudiment of a second, in one-sided spikes; the spikes digitate at the summit of the stem.

C. dactylon, Pers. (Bermuda grass).—"This grass belongs to southern Europe and to many other warm climates, and is a perennial, thriving from Michigan southward. The stems are low and come from extensively creeping root-stalks, which also penetrate the ground to the depth of three to six inches. The top spreads into several branches, somewhat resembling crab-grass. For the Northern States it is of no value, starting very late in the spring, with leaves barely an inch high when meadow foxtail is in flower, but for permanent pasture in warm countries it is highly prized, standing wet and dry weather remarkably well. It rarely ripens seeds in the United States, but may be propagated by washing the root-stalks, running them through a cutting machine and then sowing broadcast. Like quack-grass, it is a terrible pest in field crops, where its deep, stout root-stalks make it hard to kill."—[BEAL.

Sparingly introduced in the southern counties.

ELEUSINA, Gaertn.

Spikelets two to six-flowered, arranged in one-sided spikes. Low annuals.

E. Indica, Gaertn. (Yard-grass).—Stems ascending, flattened, six to eight inches high; spikes two to five. Called yard-grass in the South, where it is found common in door-yards. It is also common in this State. Naturalized from India. July. (See plate 4.)

E. Aegyptiaca, Pers.—Stems diffuse and creeping; spikes four to five, digitate. Introduced from Africa. Found in cultivated fields and yards in the southern counties. Neither of these species are of any special value. July.

TRIODIA, R. Br.

Spikelets three to twelve flowered, in a simple or compound panicle. We have but a single species in this State, found common in dry, sandy fields and waste places.

T. sceleroides, Torr. (Tall red top).—"This grass grows from three to five feet high. The stems are very smooth; the leaves are long and flat, the lower sheathes hairy or smoothish; the panicle is large and loose, at first erect but finally

spreading widely. The branches are single or in twos or threes below, and frequently six inches long, divided, and flower-bearing above the middle."—[VASEY.] The purple, spreading panicle makes it a very showy grass when matured. It makes very good hay when cut early, but if left till it is fully matured the stems are too coarse and hard to be relished by stock. Aug.

DIARRHENA, Raf.

Spikelets several-flowered in a simple, loose panicle. This is also represented by a single species.

D. Americana, Beauv.—Stem three to four feet high from running root stalks; leaves broad, twelve to eighteen inches long; spikelets few and scattered. Found along the Ohio and lower Wabash rivers. It would probably prove valuable for hay if a thick stand could be secured. Aug.

DACTYLIS, L.

Spikelets several-flowered, crowded in one-sided clusters, forming a branching, dense panicle.

D. glomerata, L. (Orchard grass).—This is pretty well distributed over the State, and yet, judging from the questions we have received regarding it, it is not so well known by farmers in general as it deserves, since it is considered by those who have used it, one of the most valuable of all grasses. Many farmers who have tried it prefer it to timothy for mixing with clover, as it ripens with the clover, while timothy ripens later. As a pasture grass it is hard to excel.

"After being cut it has been found to grow four inches in less than three days. Sheep leave all other grasses if they can find this, and, acre for acre it will sustain twice as many sheep or other stock as timothy. Cut at a proper stage it makes a much better hay than timothy and is greatly preferred by animals, being easier to masticate, digest and assimilate, in fact, more like green grass in flavor, tenderness and solubility."—[PROF. PHARES, in Report of U. S. Department of Agriculture.] June.

KOELERIA, Pers.

Spikelets three to seven-flowered, crowded in a dense and narrow spike-like panicle. This is closely allied to the former genus and has but a single species.

K. cristata, Pers.—Stem simple and upright, growing in tufts. Quite generally distributed throughout the State but is not generally known. Found on high, dry land. Farther west it makes a valuable addition to the pasture grasses. June, July.

EATONIA, Raf.

The two species belonging to this genus are quite slender, growing in tufts, with flat leaves and small, greenish spikelets bearing usually two flowers.

E. obtusata, Gray.—Panicle dense and contracted, the spikelets on short, erect branches. Our specimen was sent from the southern part of the State, but it

doubtless occurs elsewhere. Found in dry, shady places, and furnishes only a limited amount of pasturage. June, July.

E. Pennsylvanica, Gray.—Panicle long and slender, and more open. This is found quite common in moist woods, but, like the other species, it grows too thin to be of much value. June.

MELICA, L.

Spikelets two to five-flowered in a simple panicle. Of fourteen species belonging to this genus, only one is reported as growing east of the Mississippi River.

M. mutica, Walt. (Melic grass).—Stem three to four feet high. Found growing in loose tufts in rich woods in the southern counties, and doubtless elsewhere, but is not considered of much value for cultivation. June.

GLYCERIA, R. Br.

There are seven species found here, all growing in moist or wet places, and none of them are of much value for hay. The spikelets are few to many-flowered and arranged in close or spreading panicles; the spikelets breaking off easily when mature.

G. Canadensis, Trin. (Rattlesnake grass).—Stem about three feet high, with numerous leaves; panicle long and drooping; quite ornamental, and is sold quite extensively in bouquets at fairs after being dyed all sorts of bright colors. Found growing in ditches along roadsides, and in marshy places. July. (See Plate 5.)

G. elongata, Trin.—Panicle narrowly elongated, being a foot or more in length, with leaves about the same length. Found in wet woods, north. July.

G. nervata, Trin. (Fowl Meadow grass).—Stem two to three feet high; panicle loose; spikelets tinged with purple, small, falling off very readily when dried. Found common around edges of ponds in shady places. Nutritious, and good to mix with other grasses in wet grounds. June.

G. pallida, Trin.—Stem slender, one to three feet high; panicle rather slender, with few spikelets. Found in shallow water, especially in the northern counties. July.

G. fluitans, R. Br. (Floating Manna grass).—Stem three to five feet high stout and leafy; panicle long and narrow, with few long and many-flowered spikelets. Found in shallow water on the margins of sluggish streams. In some parts of Europe the seeds are used for culinary purposes. It is too coarse for hay, July, August.

G. obtusa, Trin.—Stem short and stout, one to two feet high, with long, smooth leaves; panicle narrowly oblong. Wet places in southern counties. July.

G. arundinacea, Kth. (Reed Meadow grass).—Stem large, three to five feet high, with leaves one to two feet long and one-fourth to one-half inch wide; panicle a foot or more in length, spikelets usually purplish, on long, spreading branches. Stagnant ponds; common. July.



PLATE 5. *Glycyrrhiza canadensis* Torr. (Rattle-snake Grass). Re-engraved from Herp.

POA, L.

To this genus belong forty-two species, nine of which are found in this State and all are of more or less value for hay or pasture. Spikelets two to ten-flowered in an open panicle; the base of each flower more or less cobwebby; leaves smooth, flat and soft.

P. pratensis, L. (Kentucky Blue grass; June grass).—This may be taken as the type of this genus and the most valuable of all. Stem one to four feet high, depending on the character of the soil, sending off numerous running root-stalks from the base. In moist, shady locations the lower leaves sometimes become four feet long. Panicle short-pyramidal; spikelets three to five-flowered, somewhat crowded. Common almost everywhere. May, July.

P. annua, L. (Low-spear grass).—This is the very small grass, three to six inches high, first to blossom in the spring and continuing all summer. Cattle and sheep are very fond of it green, but it is too small to be of any value as hay. April, October.

P. compressa, L. (Wire grass).—Resembles the blue grass in many respects, but the panicle is more contracted and the stem is flat, hence the specific name. It is found in old pastures and waste places. It is considered very nutritious, but does not yield enough to make it pay as a hay crop. June, July.

P. serotina, Ehrhart. (Fowl Meadow grass).—This is a valuable grass for hay, but as it is inclined to grow in tufts it is better to mix it with other species. It grows to about the same height as the Blue grass; panicle elongated and "often tinged with purple." It requires a rich, moist soil. Common. July, Aug.

P. sylvestris, Gray.—A slender form found growing in woods and waste places in different parts of the State; not so valuable as the previous species. June.

P. trivialis, L. (Rough-stalked Meadow grass).—Resembles *P. pratensis*, except the leaves are more or less rough and the "panicle longer and the branches more distant." Found common in moist meadows. July.

P. brevifolia, Muhl.—A small species twelve to eighteen inches high, from running root-stalks; panicle short, with its branches mostly in pairs; spikelets three to four-flowered. Found in dry woods along the Ohio river. April, May.

P. alsodes, Gray.—Panicle narrow and loose; leaves rather narrow and three to four inches long, often sheathing the base of the panicle. Southeastern counties. May, June.

P. debelis, Torr.—Stems slender and weak, two to three feet high; panicle small, branches slender, spikelets easily broken off when dry. Found sparingly in dry woods in Tippecanoe county. May.

ERAGROSTIS, Beauv.

Members of this genus may be very properly classed as weeds, as we are not aware that any virtues have ever been discovered in them. They are all low and more or less spreading, with numerous flattened spikelets having from two to seventy flowers.

E. major, Host.—An introduced species, commonly found in gardens and along roadsides in late summer; branching profusely, and the flattened spikelets containing from ten to fifty lead-colored flowers. Aug.

E. minor, Host.—Also introduced, and differs from the preceding in being smaller, the spikelets having fewer flowers, and being less widely distributed. Aug. (See Plate 6).

E. reptans, Nees.—A very small, spreading species, two to five inches high, found along gravelly river borders; spikelets flat, ten to thirty-flowered. Aug.

E. Frankii, Meyer.—A little taller than the preceding, and the stems more slender and delicate, of a reddish tint; spikelets two to five-flowered. Found common, growing in tufts, in dry, sandy ground. Aug.

E. tenuis, Gray.—A much larger species, with its panicle one to two feet long, very loose and spreading; spikelet six to twelve-flowered. Quite common. Aug.

E. capillaris, Nees.—About the size of the preceding species, with a large, spreading panicle one to two feet long, with very small, purplish spikelets well scattered, two to four-flowered. Quite handsome. Common. Aug.

E. pectinacea, Gray.—Stem one to three feet high; panicle widely spreading, generally longer than the stem; spikelets five to fifteen-flowered, purplish. Common. Aug.

E. pectinacea, var. *spectabilis*, Gray.—This differs from the species by having the branches of the panicle shorter, and the leaves and sheathes smooth. Found in the central part of the State. Aug.

E. Purshii, Schrad.—Stem one to two feet high, decumbent at the base; panicle eight to twelve inches long, loose and spreading; spikelets narrow, five to twenty-flowered. Found in dry, sandy ground. Quite common. Aug.

FESTUCA, L.

Of the twenty-three species named we have been able to find but two growing wild in the State. The spikelets are two to many-flowered, in panicles.

F. elatior, L.—This is an introduced species, and found widely distributed, growing in cultivated fields and along roadsides in various parts of the State. Stem two to four feet high, with long, broad leaves; panicle five to ten inches long, somewhat spreading; spikelets five to ten-flowered. It is grown extensively in Europe for hay, and to some extent in this country, giving a large quantity of hay with plenty of excellent feed afterward. In portions of Western New York, where stock is not allowed to run at large, we have seen this grass growing luxuriantly along the roadsides, to the exclusion of almost all other species. June, July.

F. nutans, Willd.—A tall, slender species, with a panicle composed of long, slender, spreading branches; spikelets scattered, three to five-flowered. Found in dry woods; of not much value as a meadow grass. July.

BROMUS, L.

Spikelets more or less flattened, five to many-flowered, in panicles. There are twenty-four named species in this country, but only four have been found in this State, the most important of which is:

B. secalinus, L. (Chess or cheat).—This comes from Europe, and *not from wheat*, as many farmers once supposed. Panicle spreading, the slightly branching peduncles drooping; spikelets oblong, smooth, containing "eight to ten rather distant flowers," which sometimes bear a short awn. June, July. (See Plate 7).

B. racemosus, L. (Upright chess).—This is another introduced species, nearly like the last, except the stem is more slender and the panicle more erect, and contracted. Commonly mistaken for chess. July.

B. Kalmii, Gray. (Wild chess).—A perennial and native to this country. Stem one and a half to three feet high, with a small, simple panicle, the spikelets drooping when mature. Found in dry ground. Common. June, July.

B. ciliatus, L.—This is taller than *Kalmii*—three to five feet high; panicle very loose and drooping; spikelets seven to twelve-flowered. Common. July.

UNIOLA, L.

Spikelets closely many-flowered, very flat, in an open or spiked panicle; leaves broad. Represented by a single species, found in the southern counties.

U. latifolia, L.—"A handsome grass growing two to three feet high, with very broad leaves and spreading panicle; the drooping spikelets larger than those of any other grass we have, being an inch or more long and more than half as wide, consisting of ten to twelve flowers." It is valuable farther south, furnishing an abundant supply of early feed. Aug.

PHRAGMITES, Trin.

Spikelets three to seven-flowered; the flowers rather distant; tall and stout perennials, broad leaves and large terminal panicle.

P. communis, Trin. (Reed grass).—A tall, reed-like grass, growing along streams and in marshes, often reaching ten to fifteen feet high, and specimens are reported from Gibson County that measured nineteen feet in height. The panicles form very ornamental plumes. Sept.

ARUNDINARIA, Michx.

Spikelets flattened, five to fourteen flowered in panicles. Members of this genus form the canebrakes of Virginia, Kentucky and farther south. Only the smaller species is found in this State.

A. tecta, Muhl. (Small cane).—Found in swamps in the southern counties, growing from two to twenty-five feet high, and one to three inches in diameter; leaves one to two inches wide. These furnish an abundant supply of feed for cattle. May, June.

LOLIUM, L.

Spikelets many-flowered and placed edgewise on the rachis.

L. perenne, L. (Rye grass).—This is an introduced species, escaped from cultivation; found sparingly scattered in meadows and pastures in various parts of the State; two to three feet high, and makes a very good grass for mixed hay or pasture. June. (See Plate 8.)

L. perenne, var. *Italicum* (Italian Rye grass).—Also introduced. It may be recognized by its flowers bearing long awns, while those of the species are only acute pointed. It is fully equal to the species for hay or pasture, especially on moist land. June.

AGROPYRUM, Beauv.

Spikelets three to several-flowered, arranged in heads or spikes. This was formerly called *Triticum*, the most familiar example of which is our cultivated wheat.

A. repens, Beauv. (Couch or Quack grass).—Spikelets four to eight-flowered, usually bearing a short, straight awn. "It has an abundance of foliage and sends up a flowering stem two to three feet high, which is terminated by a close, narrow spike of flowers from three to six inches long." It spreads very rapidly by means of underground root-stalks, which throw out roots at every joint. and, when these are broken up by the plow or harrow, form separate plants. Hence, when fields infested by it are wanted for crops, it becomes very troublesome, but for permanent pasture or meadow it is really valuable. June. (See Plate 9.)

A. violaceum, Beauv.—This species has no running root-stalks, and the dense spike is tinged with violet. Found in Lake County. June.

HORDEUM, L.

To this belongs our common barley. Spikelets one-flowered, with a rudiment of a second, arranged in a spike-like head.

H. jubatum, L. (Wild barley; Squirrel-tail grass).—A common annual, sea-shore species, and is found sparingly on sandy land in various parts of this State. Stem twelve to eighteen inches high, the spike bearing very long awns (two to three inches long), and when ripe, breaking up into joints. Of no value here. June.

H. pratense, Huds.—This is found along the lower Wabash. It seldom grows more than eighteen inches high, and when young is eaten by stock, "but when mature is worthless, on account of its long barbed awns." June.

ELYMUS, L.

Perennial, coarse grasses, growing along river banks and waste places. Spikelets arranged in spike-like heads, one to seven-flowered.

E. Virginicus, L. (Wild Rye).—This grows from two to four feet high, with a spike two to three inches long, upright, flowers bearing rather short awns. Common, and nearly worthless here, but possesses some value farther south. Aug.

E. Canadensis, L.—Similar to the previous species, but the spike soon becomes nodding, and the awns are much longer. It makes a coarse, rough hay of little value. Common. Aug.

E. striatus, Willd.—Stem and spike shorter and more slender than the previous species; awns an inch long. Also common. July. Aug.

ASPRELLA, Willd.

Spikelets two to three, or sometimes solitary, on each joint of the rachis, loosely two to four-flowered, in a loose, terminal spike.

A. hystrix, Willd. (Hedge-hog grass).—A coarse grass found common in moist woods. Stem three to four feet high, readily distinguished from *Elymus* by its very loose spike three to six inches long, the spikelets falling off quite early. July, Aug.

DANTHONIA, Beauv.

Spikelets three to many-flowered in a close panicle, the flowers bearing a spirally-twisted awn.

D. spicata, Beauv.—Stems tufted, low, one to two feet high; leaves short and narrow. It grows sparingly in dry woods and shady places in various parts of the State. Sheep and cattle do not seem to care for it when they can obtain other grasses. June, July. (See Plate 10.)

D. compressa, Aust. (Mountain Oat grass.) Panicle more spreading, leaves shorter, and stem about the same height as *spicata*; spikelets of a purplish tinge. Said to furnish good pasturage. July.

TRisetum, Pers.

Spikelets two to several-flowered in a contracted panicle.

T. palustre, L.—A tall, slender grass, two to three feet high, panicle rather long and loose; spikelets flat, the upper flower bearing a bent awn; the lower flower mostly awnless. Common on low ground. June.

DESCHAMPSIA, Beauv.

Spikelets two-flowered, mostly in a loose panicle with slender branches.

D. flexuosa, L. (Hair grass).—Stem one to two feet high, slender, lower leaves tufted and thread-like; panicle spreading, brownish color, flowers bearing a small, bent awn. Common in dry places. June

ARRHENATHERUM, Beauv.

Spikelets two-flowered with a rudiment of a third, in an open panicle, the lowest flower bearing a long, bent awn.

A. avenaceum, Beauv. (Meadow Oat grass).—This was introduced from Europe and sparingly cultivated in this country, and, it seems, has escaped from cultivation, as it is occasionally met with in different parts of the State, more commonly

toward the south. It is a vigorous grower, two to four feet high, rather slender, with broad, flat leaves; panicle six to ten inches long, rather loose, resembling, somewhat, the common oat. It makes a very light hay when grown alone, but is recommended as a mixture with other grasses, especially for pasture. May, June.

HOLCUS, L.

Spikelets two-flowered, crowded in an open panicle, the upper flower bearing a stout, bent awn.

H. lanatus, L. (Velvet grass).—A soft, velvety grass found growing in fields where it has escaped from cultivation. Stem stout, one to two feet high; panicle close with a purplish tinge four to six inches long. It is not grown to any extent North, but in the South it seems to do better, especially in moist places. June.

ANTHOXANTHUM, L.

Spikelets three-flowered, with only the central one perfect, in a spiked panicle.

A. odoratum, L. (Sweet Vernal grass).—Frequently used in lawns on account of the pleasant odor which is given off after being cut and while drying. It is sometimes found sparingly in meadows, where it imparts a very pleasant odor to the hay, and cattle eat it with a relish. It is also used by the Indians of Northern Michigan in making fancy baskets. It is not a profitable grass for the farmer on account of its small size and its habit of growing so thinly on the ground. May, June. (See Plate 11.)

PHALARIS, L.

Spikelets crowded in a clustered or spiked panicle, with two neutral, mere rudiments of flowers, one on each side of the perfect one.

P. arundinacea, L. (Reed Canary grass).—Stem two to five feet high; leaves abundant; spikelets crowded into a very close panicle. Found along river bottoms and in marshes, where cattle eat it with a relish. In some of the western States it is recommended very highly for hay. The ribbon grass, so common in door yards, is a variety of this species. June, July. (See Plate 12).

P. canariensis, L. (Canary grass). This is the grass that furnishes the canary seed of commerce. It is smaller than the preceding, one to two feet high, and the spikelets crowded into an oval spike. It has escaped from cultivation in the southern counties. July, August.

MILIUM, L.

Spikelets apparently one-flowered, arranged in long delicate panicles. Represented by a single species.

M. effusum, L.—A tall, smooth perennial grass three to six feet high; leaves long, broad and flat; panicle spreading, eight to ten inches long. Found growing in damp woods in the northern portion of the State. The plants multiply by the roots as well as by the seeds, thereby rendering it of considerable value for a permanent, wet situation. June.



WAX 102

PLATE 11.—*Anthoxanthum odoratum*, L. (Sweet Vernal Grass) Re-engraved
from Department of Agriculture Report.

PASPALUM, L.

Spikelets arranged in two to four rows on one side of a flattened rachis. There are twenty-six species belonging to this genus in the United States, but only three have been found in this State. "They are all relished by cattle, and some of them are considered of great value as pasture grasses."—[VASEY.

P. fluitans, Kunth.—Stem much branched from the base, six to twelve inches high; leaves numerous, broad and thin; spikes rather small and delicate. Found in swamps and along streams in the southern counties. September.

P. setaceum, Michx.—Stem slender, decumbent, one to two feet high; spikes slender, two to four inches long. Common in sandy fields. August.

P. leve, Michx.—Stem upright, stout, one to five feet high, leaves large and long, spikes rather stout, two to three inches long. Very common in wet land, especially in the South, where it is said to produce large crops of hay. Aug.

PANICUM, L.

Spikelets one and one-half to two-flowered, panicle or racemed. There are fifty-three species in the United States, only fourteen of which have been found in this State. Some of them are quite valuable, but the greater portion are practically worthless, so far as furnishing feed for stock is concerned.

P. filiforme, L.—Stem slender, one to two feet high, lower sheathes hairy, spikes long and slender. Found on dry, sandy soil; common. Aug.

P. agrostoides, Spreng.—Stem four to six feet high in wet ground or along streams, in the southern counties; panicles reddish color. It makes a large amount of foliage which makes good hay if cut before flowering. Aug.

P. anceps, Michx.—This resembles *agrostoides*, but is smaller and not so valuable for hay. Also found in the southern counties. Aug.

P. capillare, L. (Old Witch grass).—A small, spreading species, branches of the panicle very delicate and light, so that when dried in autumn they are easily broken off and blown by the wind to fence corners. Common in sandy soil and cultivated fields. Sept. (See Plate 13.)

P. autumnale, Bosc.—Panicle capillary and spreading, leaves small and narrow, the lower ones more or less hairy. Found in southwest counties. Sept., Oct.

P. clandestinum, L.—A coarse, broad-leaved species, two to three feet high, growing in marshy ground. Common. June, Sept.

P. crus-galli, L. (Barn-yard grass).—This is naturalized from Europe, and is the coarse, branching grass, one to four feet high, that is found so common in and around neglected barn-yards. Aug., Oct.

P. dichotomum, L.—Another very common species, eight to twenty inches high, with a spreading, compound panicle one to three inches long. Found in dry ground and waste places; not of much value for hay. There are a great many varieties belonging to this species. July, Aug.

P. glabrum, Gaud.—Introduced. Small, spreading. Common in lawns late in the season, where it becomes a great nuisance. Aug., Sept.

P. latifolium, Muhl.—Stem one to two feet high, leaves one inch broad and five to six inches long, panicle two to three inches long, branches spreading. Common in moist ground. June, Aug.

P. proliferum, Lam.—Stems thick and succulent, branched; spikelets of the compound, pyramidal panicles, pale green. Marshy river banks in southern counties. Aug.

P. sanguinale, L. (Crab-grass).—Stems two to three feet high, with three to six flower spikes at the top. It is considered an annual weed here, but farther south it is reported to make valuable hay. Aug., Oct.

P. depauperatum, Muhl.—Stems simple or branched from the base forming tufts, six to twelve inches high; panicle simple, contracted with few flowers. Found in dry woods; common. June.

P. virgatum, L. (Tall Panic grass).—A tall perennial grass, three to five feet high, growing in bunches along sandy river banks; very prolific, and makes good hay if cut when young; too harsh and woody when ripe. Common. Aug., Sept.

P. viscidum, Ell.—Stems upright, much branched, leaves abundant; both stems and leaves covered with a soft down; panicle spreading, four to six inches long. Moist places in the southern counties. Aug.

SETARIA, Beauv.

Spikelets arranged in a dense spiked panicle or cylindrical spike.

S. glauca, Beauv. (Foxtail grass). Stems two to three feet high, spikes of a bright yellow color. Found everywhere in cultivated fields and waste places. Aug., Sept.

S. viridis, Beauv. (Pigeon grass).—Similar to the above except in color (green) and having fewer bristles. A troublesome weed in gardens and corn fields. Common. Aug., Sept.

S. Italica, Kth.—This has escaped from cultivation in the southern part of the State. The spike is large and compound, six to nine inches long, yellowish in color; sometimes called millet.

S. verticillata, Beauv.—Spike cylindrical, two to three inches long, pale green, bristles short. It has been reported only from Marion County. Aug.

CENCHRUS, L.

Spikelets enclosed, one to five together, forming a hard, globular, spiny burr.

C. tribuloides, L. (Hedge-hog grass).—Stems short and branched, one to two feet high; spike oblong, of eight to twenty roundish heads covered with spreading, short, barbed spines. Found on dry, sandy soils. A noxious weed. Aug.

ANDROPOGON, L.

Spikelets in pairs and arranged in spikes or racemes. This genus embraces a large number of species, but they are mostly found farther south. The three species found in this State form what is known as the large prairie grass.

A. provincialis, Lam.—This is the tall form, five to six feet high, the stem terminated by two to five rigid spikes; the awn of the fertile flower long and bent. Common on prairie soil, where it furnishes a large amount of hay. Aug., Sept.

A. scoparius, Michx.—This is shorter, one to three feet high, with numerous branches; leaves and sheathes hairy. Dry ground; common, especially northward. July, Sept.

A. dissatiflorus, Michx.—Stems flattish below, two to three feet high, with short branches above, smooth; spikelets loose, with dull white hairs. Common southward. Sept., Oct.

CHRYSOPOGON, Trin.

Spikelets two to three together in an open panicle, the lateral ones sterile, or often mere rudiments.

C. nutans, Benth. (Indian grass).—A tall, slender, perennial grass, three to five feet high; panicle narrow and of a handsome brownish color. Common in dry soil, where it grows rather sparsely. Sept., Oct.

SORGHUM, Pers.

Spikelets much as in *Chrysopogon*, which was formerly classed with this.

S. halapense, L. (Johnson grass).—This was introduced, and is occasionally found escaped from cultivation; is considered valuable farther south and on the dry lands farther west, but its good qualities have not yet been determined here. It is very late in starting in the spring, but holds on well into the autumn, and for that reason might be valuable as furnishing fall feed. Sept., Oct.

Whole number of genera	50
Whole number of species	128

FARMERS' "ROUND-UP" INSTITUTE.

THE CLOSING INSTITUTE OF THE STATE SERIES FOR 1890 HELD IN
THE STATE AGRICULTURAL ROOMS.

The institute work of the State for the year closed with a grand "round-up" held in the lecture room of the State Board of Agriculture, State House, commencing at 10 o'clock A. M., March 27, and continuing three days. It was held under the auspices of the Marion County Agricultural Association. Prof. W. C. Latta, Superintendent of State Institute work, called the Institute to order, and Rev. Dr. Cleveland offered up a prayer. After which the venerable Dr. Ryland T. Brown, of Indianapolis, was selected to preside over the meeting. He accepted the proffered honor in a few pertinent remarks. Among other things he said: The farmer who goes to work intelligently and puts his mind and thought into what he is doing works easily; while that work done without a knowledge of acquiring or what he is doing it for, is a drudgery. The life of a civil engineer is a heavy one, but it is cheerful because his mind is in the work and he loves to perform his task. When you work intelligently the labor is always light. There is certainly nothing in the life of a farmer that is disagreeable, not near so much as the physician practicing medicine, yet he does it cheerfully and don't complain because his brain is in it. Bring agriculture up to that level and it will be just as light and cheerful and honorable as this other work of which I have spoken. We have much before us in this meeting, and we will proceed with the program at once. The first is a paper by Hon. Jasper N. Davidson, of Whitesville, Ind., on

SOME FACTS ABOUT SHEEP HUSBANDRY.

"And Abel was a keeper of sheep." Thus can our present well-kept flocks boast a lineal ancestry second to none in the world's history. The "firstlings of the flock" were then deemed a respectable offering unto the Lord. "A keeper" indicates that, even in those days, they were of value, as further instanced by the

many biblical references. A certain peculiar interest and veneration always attaches to this line of husbandry which invariably is found in the enthusiastic breeder. Our subject means the raising, feeding and management of sheep with a view to the profits arising from wool and mutton. It embraces a wide field, and having been admonished as to time it becomes necessary to abridge even the practical matter at hand, leaving to the shepherd the pleasant review of their history, which will take him back to the plains of Palestine.

As papers of this kind are written for the encouragement of beginners, as well as present breeders, we suppose an inquiry like this might be made: To what extent has the sheep industry been improved within the last half century? In 1840 the average weight of fleece was 1.85 pounds; in 1850 it was 2.45 pounds; in 1860 it was only 2.68 pounds; in 1870, 3.52 pounds; in 1880, 4.7 lbs. The Chief of the Bureau of Statistics gives the average weight, in 1887, as 6 pounds per fleece. It requires now less than one-half in number to produce the same quantity of wool as in 1860. The weight of carcass has increased in nearly the same ratio. An extra load of sheep would only average ninety pounds in 1850. At Chicago, in 1864, a car load averaged one hundred and fifteen pounds. So unusual was this that many questions were asked as to how and where they were fed. By consulting market reports, we find one hundred and fifty pounds now a common average for coarse wool breeds; and I have no doubt that the next decade will show an average of eight pounds fleece, with gross weight of one hundred and eighty pounds. This will require careful breeding and liberal feeding.

To the beginner this may seem a little obscure, so now as to what constitutes good breeding and feeding, and about this healthful industry there should be no mystery. Any intelligent farmer with small capital can start a flock. Secure from fifteen to thirty ewes from one to three years old, straight on back, with more or less symmetry of form, not too leggy, in common parlance, but of stout bone, with sound feet and udders. If the wool and general make-up tends to coarseness in ewes selected, choose a pure blood buck of finer form and wool, and if the reverse a coarser and heavier buck should be chosen. The flock-master should give constant attention during the year, but there are three seasons which require extra care and skill. These are the coupling, yeanning (which includes shearing) and weaning periods. The coupling depends much on the purpose for which lambs are to be raised. If for feeding and stock purposes, we advise for the general sheep raiser the 20th of October, the period of gestation being one hundred and forty-five days. This would bring the earliest lambs by March 15th, which, in this latitude, usually brings reasonable temperature and many days of sunshine and warmth. During the period of gestation no abrupt changes of feed should be made. In fact, this is a good rule for the entire year. Fall pasture, which tends to neither lean nor fat, will be safe. The same for winter treatment, avoiding much grain, especially corn. The best general feed for winter and early spring is clover hay—we mean such hay as a live farmer makes, by cutting clover in full bloom from which all rain or dew has evaporated, and by curing to the extent that a bunch thrown down will retain its position or stand up, paradoxical as it may seem. Corn fodder is good feed for early winter, but later is apt to become soaked and worthless.

Thirty days before lambing the ewes will be greatly benefited by a change to oats, wheat bran, or from two to four ounces of oil cake or meal per day. The flock should have access to water at all seasons, especially when on dry feed. Some farmers entertain the idea that sheep do not require water in winter, others that snow eating will suffice; but experience proves the contrary. Snow is bad enough on the outside if they are compelled to lie on it, and is of little use in quenching thirst. It is more within the province of the veterinarian to give advice pertaining to this period, but the owner should be on the alert at all seasonable hours. Should he notice one or more ewes separating from the flock he should prepare to render assistance if lambing requires more than two or three hours. A knowledge of anatomy and a little practice may often save mother and lamb. Nature seems to require isolation, and emphasizes the need by causing the young to appear at night. Thus an emergency may occur at daybreak. The owner finds a first born twin, or both, lying almost dead with extremities nearly frozen. With no hot water in which to immerse them he hastily looks about, for time is precious, and espies the steaming manure heap from the horse stable. Quickly digging a hole, placing the lamb inside and covering him to the tip of his nose, he is almost sure soon to hear a bleat for nourishment. At first resort to an ordinary quart measure with spout placed near the bottom and reaching nearly to the top, having a swell on the end to hold a nipple. Fresh cow's milk, with a little sugar and mint essence, will agree with the lamb. If seriously chilled use a little ginger or spirits. The utensil above described is very useful to the shepherd and can be made by any tinner.

Many sheep raisers adhere to the old practice of docking their lambs as soon as found, but a little proof to the contrary; of all young domestic animals the lamb has least blood, and any wound at this time must be a severe shock and tax. The proper time to dock is at the end of two weeks, or when the tail begins to fatten where it joins the body. A thin sharp chisel is a good tool for the purpose. It should be applied from the under side with the bevel next the lamb. This requires a helper and block. The gelding should be delayed two weeks after docking. Many sheep men perform the whole operation at the same time. It is not only an injury to the lamb, but manifestly a barbarous custom. The operator should have not only the best tools, but also an ointment made of arnica and hog's lard in proportion of one ounce to five. With fair weather for a few days, the risk is small. At this age the lambs begin to eat meal or bran. They should have a slip to pass through, and receive their rations from V-shaped troughs. The feed to ewes may now be increased, as all danger of fever has passed; the lambs have reduced the dams' extra flesh. It is now important to carefully tag the sheep, as it not only conduces to the health of the flock, but is also a great saving of wool, and often of life, later in the season. Many delay it until shearing time, but if there is anything in flock-tending more slovenly than this we don't know what it is. In handling sheep it is often necessary to mark them, and we know of nothing better for the purpose than dry Venetian red, sifted through an old stocking. Applied in this way it combines with the oil of the wool and is not easily removed.

It is not our purpose at this time to enumerate the many diseases to which sheep are subject, but it is good policy to keep in practice the old maxim, "an

ounce of prevention is worth a pound of cure." The shepherd should have a gallon of pure pine tar, two pounds of rosin, and the same of salts and sulphur, the latter to be kept on the outside. It is an old and good plan to tar the nose at shearing time. It acts as a tonic, and is healing to the small wounds consequent on shearing. The scours may be cured by mixing one pound of rosin with four of salt.

A change from clover to poorer pasture is also advisable. Ticks and lice are very annoying as warm weather approaches. A flock, however well cared for, will not thrive with these parasites. To eradicate the pests, pen the sheep so they stand near together, and apply a decoction of tobacco with a pound of sulphur to fifty head. It should be of blood heat and applied from neck to back. One quart to each one will ordinarily give relief until shearing. When this has been completed, apply soft soap along the neck and back of both young and old. Practice this routine for two years and your flock will be rid of parasites.

In this latitude sheep may be shorn as early as April 25th. Shelter during a cold rain for the first ten days, and increase the grain, as the appetite will be good. Through many years' experience we have never lost a sheep by early shearing. Many farmers put it off until the professional shearer can come, or until the corn is planted. He not only sustains a loss of wool, but also causes unnecessary suffering to the animals. The process of shearing is wearisome, but may be greatly alleviated by having everything clean and comfortable. Make a strong platform two feet or thirty inches high, wide enough to turn the sheep, and long enough for two workers, if needed. Use only the best shears, and learn to keep them free from rust, and in cutting order. Never loan them, except to the widow or orphan. Place wool or binder-twine on a revolving spool, and tie each fleece, first one way, then turn and tie again. Take particular care that all tags are removed. The wool buyer will thus respect you, and you will gain in self-respect. If any fleeces are cotted or diseased, keep them separate, to be sold on their merit; also make note of such disqualifications and try to learn the cause. If the sheep are too thin for mutton, increase feed for from four to six weeks, and the shipper will take them at a fair price.

Whenever a flock is separated, divide the bells, so they will feel more contented. We do not mean the ordinary so-called sheep bells, but a small cow bell, which may awaken you from sleep. Bell the weaker of the flock, for the strong are never in the rear in time of danger. Our dog law is true to name, as it favors his protection more than that of the innocent sheep. We have long since learned that a community of sheep raisers can regulate the dog nuisance, provided they do not live too near a populous town.

Wean lambs from 1st to 10th of August. Provide water and good pasture. A light feed of bran or meal may occasionally be given to advantage. The buck with a bell may be turned with them a short time as a leader.

Indiana's fertile valleys and sunny hillsides are favorable to the growth of all nutritious grasses known to this latitude. The owners of her 193,013 farms would find it a paying industry to produce the entire amount of wool necessary for home consumption. If each owner of these farms would yearly clip fifteen head of sheep, we would then have 2,910,115 head instead of 1,278,000, our present

number. At six pounds per fleece, this would produce 17,460,690 pounds, instead of our present clip of 7,668,000. The present year's census will probably show 2,050,000 inhabitants of the State. Allowing the required $8\frac{1}{2}$ pounds per capita per year, it would demand the amount of 17,440,000 pounds, leaving 20,690 pounds as a surplus. A pound of mutton can be produced as cheaply as a pound of beef, the market price of each being much the same the year around. This leaves the wool as an extra profit over beef raising.

No live stock on the farm will pay better than a flock of sheep well tended. They are pleasant to handle, cleanly in their habits and unobtrusive in their quiet browsing. Nothing can add a more picturesque effect to a farm landscape than their white, soft fleeces against the green pastures. If well bred and well kept, they index thrift, care and prosperity on the part of the husbandman. To the flock owner we say, in the language of Robert Burns :

"Save their harmless lives
Frae dogs and tods and butchers' knives,
But gie them guid cow milk their fill
'Til they be fit to feed themsel',
And tent them duly e'en and morn
Wi' tests o' hay and rips o' corn ;
If e're again he keep
As muckle gear as buy a sheep,
O bid him never tie them mair
Wi' wicked strings o' hemp or hair,
But ca' them out to park or hill
And let them wander at their will ;
So may his flock increase and grow
To scores o' lambs and packs o' wool."

DISCUSSION.

Question. What causes cotted fleece ?

J. N. Davidson. We can not tell just what it is. I think the word is not in the dictionary. It is understood, however, to mean woven or matted together.

Col. Beeler, Indianapolis. I do not know that I can throw any light on the subject, but my observation is that it does not affect sheep kept in good condition but infests sheep low in flesh and being fed up. I think the cotted fleece has a little growth under the cotted part. There are some seasons worse than others ; why it is so, I do not know. I have nothing but commendation for Mr. Davidson's paper. It has been a wonder to me, why more farmers do not pay some attention to growing sheep. Every farmer should have a few. My experience is that the farm is in better condition for farming where sheep are raised,

than where they are not. Of all the animals raised on the farm there are none which require more care and attention than the sheep; they are less capable of taking care of themselves. It is not safe to turn them out with other stock, especially colts and hogs. I have known of instances, where hogs would destroy young lambs. Mutton is a staple article of food and is in much demand. The price of mutton and beef for the last two years, here at the stock yards, has been somewhat in contrast, the mutton averaging 33 per cent. above beef.

D. L. Thomas, of Rushville, Ind., read the following paper on

GROWING PIGS FOR THE GENERAL MARKET.

The first duty of him who grows pigs for the general market is to acquaint himself with what that market wants. He is foolish, who would produce anything to sell without first considering the demand for the article in question. The hog market demands plump, solid hogs with the least possible waste. Hogs which furnish an undue amount of offal are not desirable. Broken down hogs or those with faltering locomotion, are despised at the stock yards. Men dislike to wait on such hogs; and they are in ill-favor with packers, on account of bruises in the meat caused by the hogs being whipped to hurry them along; such hogs always bring low prices. Very large boned hogs are not desirable on account of the waste or loss due to the extra or unnecessary bone. Besides such hogs do not usually have the best action and the limbs are not so strong as those of hogs with medium sized bone. The construction of large limbs are too loose. Shrewd breeders always discard what they term "porous or spongy limbs." And the general markets demand small or medium-sized compactly built limbs. Pigs with long pasterns and long toes should be ignored on account of the natural tendency to break in the feet.

COMFORT.

Farmers should adopt as a maxim—The most comfort, the greatest gain. It is impossible for pigs to thrive well and suffer discomfort. This important feature is in a great measure overlooked. Their protection from inclement weather is highly essential, summer or winter.

But the loss from injudicious ringing of pigs can not be estimated. Many pig raisers have never thought of such an idea. To mention the fact will quickly suggest that a pig with a festering sore in its nose can not thrive like the pig that is free from pain. A pig should not be rung in the snout. For the snout is composed of gristle which is simply a continuation of the bone of the nose. It is flexible bone. Can it heal while pierced with a metallic substance? If not, then the pig never has a perfectly well nose while the ring is in its snout. When the pig is moving about the snout is always prominent. And if it contains a ring, that

ring is continually whetting on the grass, weeds or whatever the pig approaches. Then think of the excruciating pain at feeding time when ears of corn strike the ring.

A far better plan is to put the ring horizontally in the skin (not in the gristle), between the nostrils. The outer edges of the points of the ordinary round ring should be beveled for use. Then when the ring is closed the joints are smooth. No sharp point left to irritate the nose. The ring is shielded by the point of the nose, and hence, does not strike objects in front of the pig. The punctured skin heals and is not made sore by ears of corn striking the ring. And the ring wears much longer; sometimes as much as three years.

EVENNESS.

Pigs should be as nearly the same age as possible for the general market, for car-load lots always sell for a little more when the pigs are nearly the same weight. Packers have orders to fill for certain markets, and it is more satisfactory to have pieces or cuts of the same size.

GROWTH.

Make the most growth possible on grass. Clover is much cheaper than corn and develops more muscle; hence, makes a better quality of meat. But pigs should not be confined to clover for months as is often the case. The diet is apt to produce acidity of the stomach. (Sour slops aggravates the disease). Many pigs die from this cause, when the owner reports that the "cholera" struck him. He is seemingly unconscious of the fact that he is "struck" with gross carelessness. An exclusive diet is unfit for any animal.

Of course every intelligent pig grower knows that scrub pigs and quick growth are incompatible. You will always see him in possession of improved stock. Then, with careful management, he secures early maturity. Thus he reduces cost of production and shortens the risk of disease.

COST OF PRODUCTION

Is a factor sadly overlooked by pig growers. The circumstances of the case prevent them from calculating as closely as manufacturers. But the same method should be adhered to as rigidly as possible. In autumn the herd should be selected and invoiced, the cost of wintering noted, the value of pasturage for the breeding stock, the cost of fattening, and the value of labor in caring for the stock. All the details of cost should be computed. Then the owner will have a more adequate knowledge of his bearings. And when the farmer has scales he should weigh his grain, and also, at stated intervals, weigh the pigs. Then he would learn how many pounds gross weight were produced by a bushel of corn. As it now is, the whole range of pig raising is largely in the realm of uncertainty as to cost of production; hence, also as to profit or loss.

CARE.

Constant care is essential to success. But it will never be bestowed by the man who does not love pigs. Such duty is irksome to him and is always neglected. This fact explains why fancy breeders do not have swine disease so frequently as do general farmers. Usually professional breeders love pigs; hence, pigs do better in their hands. This point can't be better shown than by reference to the human family. Affectionate parents never grow weary in waiting upon their children. The latter are loved, fondled and often spoiled and the parents enslaved to wait upon them. But the labor is cheerfully borne. Suppose those children were removed and some waifs put into their places! What a remarkable change would appear in their treatment. So with the management of live stock. The stock always does best in the hands of men who love it, for it receives so much better attention. For this reason, if no other, swine disease is not likely to be ever thoroughly eradicated. But those who raise pigs should cultivate a liking for them. By this means the ravages of disease will decrease, pigs will do better and greater profits be made out of the business.

DISCUSSION.

Sylvester Johnson. I would like to know what is the best feed for brood sows?

D. L. Thomas. That is such a general question, and hard to answer, it depends much on circumstances and time of year. I could not lay down any explicit rule, but we should be governed by circumstances and time. A mixed diet is best, but when you have clover they should have that, with grain added. Ship stuff is good. Oats ground with corn is an excellent diet.

T. C. Phelps. What is the best age to market?

D. L. Thomas. As early as they can be got into market. We should not keep them eighteen months, or even a year, if they can be marketed before that time. If we can get them in market at eight months old, so much the better.

I. N. Cotton. Several of us do not understand just where that ring was to go.

D. L. Thomas. For several years I have put the ring in the skin between the nostrils, and not in the gristle. If it is in the gristle it irritates the nose and keeps it sore, but if put in between the nostrils it gets well right away, and I have had

them to stay for three years; indeed I have had them to stay until hairs grew out over them. I always use the round ring, it has less tendency to keep up soreness.

Mr. Cotton. How about rooting?

D. L. Thomas. A pig can not root only in very soft ground. This rooting is a matter of practice, and not hereditary, in a pig. If you ring early it will never get to rooting. After they get older they break out more rings than if rung early.

I. N. Cotton. My pigs begin to root before they are done sucking; I don't like to ring before they are weaned. This winter my pigs began rooting when not more than a month old. Would you ring them?

Mr. Thomas. No; I would put them in a place where they don't care to root; it is a little early to ring. It is a good way to wean by putting a ring in the nose.

State Senator J. A. Mount presented the following address:

"HOW TO INCREASE THE PROFITS OF FARMING."

The question raised in the topic presupposes the possibility of increase, and seeks, through the medium of discussion, the methods to that end. Greater yields of crops will increase the profits. Diligent attention to all the details of farm management will enlarge the income and curtail the expenses. The secrets of large yields always and everywhere are, good seed, rich soil and thorough tillage.

LABOR AND THOUGHT

Must be combined to attain the best results in farming. Formerly, success was largely dependent upon brawn and muscle; now, upon intelligent thought. The highest success upon the farm is dependent upon the wise solution of the many complicated questions that confront the farmer of the present. He must study the law of supply and demand, factors that largely control prices. Through statistical reports he is enabled to watch the growth and development of the crops of the world. Such information will aid in an intelligent conclusion as to what to grow and when to market. The adaptation of crops to soils, the selection of such rotation of crops as will insure best results, demand care and thought. The relative value of different kinds of feed, the cost of production, wise economy in utilizing to best advantage all crops growing. These are factors determining profits and demanding thought.

Governments are rapidly learning the importance of intelligence in farming. Agricultural Colleges are founded, Experimental Stations are established, and

Industrial Schools encouraged. These things indicate the trend of enlightened public sentiment, and points to the necessity of higher intelligence on the farm and among laboring men. The farmer who is not inspired to a loftier ambition as he beholds the march of progress about him, but who regards advanced thought and scientific research as superfluous, will find himself engulfed in the fog and entangled in the meshes of disappointment and error.

AGRICULTURE THE FOUNDATION OF PROSPERITY.

Success in agriculture has marked the progress of civilization; its decline, the ruin of a people. Promised temporal blessings to God's ancient people were through the field. Divine chastisements sent, brought the withholding of fruitful seasons. If the farm was neglected, the soil untilled, the flocks unshorn, the herds untended, the wheels of commerce would cease to revolve, the busy hum of industry in factory would be no longer heard, the fires in the furnace would go out, foundries, rolling-mills and machine shops would stand idle, the wolf would be at the door alike of cottage and palace. All would succumb to a calamity so dire.

PROFITS CAN AND SHOULD BE INCREASED.

If the methods of the successful progressive farmer was the rule profits would be increased. Farmers' institutes that tend to bring out advanced thought and successful methods will increase the profits of farming. Farmers surrounded by like conditions of soil, season and climate are not uniform as to results. The farmer who rejoices in his vocation possesses the spirit of enthusiasm and emulation, plies his energy with untiring zeal, seeks for advanced methods, reads agricultural papers, attends farmer clubs and institutes will reap abundant profits in his vocation. "The hand of the diligent maketh rich." "Seest thou a man diligent in his business, he shall stand before kings, he shall not stand before mean men." The truth of these proverbs has not been lost with the lapse of centuries. To insure success

SOUND ECONOMY

Is essential. This does not mean the spirit of parsimony, but wisdom in the outlay of money. It is sound economy to supply the farm with good implements, but bad economy to neglect timely repairs and careful protection from weather. "The rust and rot of winter do more for the implement maker than the wear and tear of summer."

It is sound economy to supply the home with good books and papers. It is bad economy for any farmer to deny himself a good agricultural paper. Diligence and industry may grow good crops, intelligent economy must utilize them to the best advantage. Mr. J. T. Polk, one of the best economists and successful business men of the State, said the waste on the farms in our State was equal to the net profits. Professor Henry says the corn stover wasted each year in the Mississippi Valley has a food valuation for stock equal to the mortgaged indebtedness on the farms. I was impressed with the statement of a German farmer in

Switzerland County, who said the low price of produce was not due to over production. He said thousands of families needed food and clothing, but the money that should buy these necessities went over the counter for drink, and families were suffering for these necessities while the country was overstocked.

A great blessing would follow in the wake of our teaching, if we could inculcate in the minds of our children such principles of temperance and economy as would fortify them against the use of whisky and tobacco, both of which cause immense expenditure of money, and are attended only with evil results.

SYSTEM IN FARMING.

Order is nature's first law. It should be the rule of the farm. The thrifty farmer will always find employment on the farm, but no time for loafing. The condition of implements and machinery should be fully known, and ready when needed for use. The farmer should have everything in readiness to begin with the season and push his work. To be behind with work means something will be neglected, or imperfectly done, causing loss. More attention should be given to fruit culture. This would afford profitable employment for much odd time. All parts of our State are adapted to small fruits. These in abundance, fresh from the fruit garden for three months in the year, can be had with a little intelligent care and attention.

LARGER YIELDS OF CROPS.

Ten bushels of wheat to the acre gives small profit, if any. Fourteen bushels of wheat to the acre was the yield in our State last year. This gives to our wheat growers small profit. Twenty bushels per acre would be an increase in yield of 42 per cent.; this would largely increase the profits. Good farming *can* and *should* increase the yield to that amount. It is possible to increase the yield of the State beyond this.

The yield of corn for last year was 28 bushels to the acre. The yield in this staple crop *can* and *should* be largely augmented. It is *possible* by high culture to double the yield. We are not likely soon, as a body of farmers, to reach the limit of the possible. Some farmers will gather three times greater yields than others, surrounded by like environments. While professions are crowded, there is room at the top. Though farm produce is low and profits small, there are good profits at the top.

RICHER SOIL AND BETTER TILLAGE

Will increase the yield of crops. If our farmers now used the crude implements and followed the methods of culture in vogue when the land was first cultivated, failure would be the result. The rich vegetable mould that then made the soil mellow and productive, is gone; the fertility of the soil has been rapidly depleted. In three months of active institute work in our State, I have been amazed to see results and hear statements, confirming the fact that the fertility of our soil is being rapidly exhausted. I have heard it stated in different parts of our State, that some of the soil was now so worn out by continuous cropping and selling the crops, taking from the soil, returning nothing, that paying crops could not now be

grown. In one county, the farmers said, thousands of acres of clay hill land had been abandoned. Hon. J. Q. A. Sieg said some of the land could not be recuperated by growing clover, it was too poor to grow clover. He said it was a case of grandfather sickness, meaning, the land by continuous growing of grain had been rendered so poor that commercial fertilizers must be used before clover would grow. In this great agricultural country of ours, in the very beginning of its development, with agriculture as the foundation for its future greatness, it behooves us to call a halt in our unwise, unthrifty and improvident methods of farming. The initiatory steps to better soil and better tillage will demand

BETTER DRAINAGE.

A wet soil is unproductive, it is cold and clammy. Wheat and clover will often be destroyed by the upheavels of frost, or damaged by wet in spring or summer. Wet land delays planting in spring, prevents tillage in summer, and often causes partial, and sometimes total failure of crops. Well drained land is warmer, germinates grain quicker, promotes rapid growth, and insures increased yields.

THE CORRECT THEORY TO SUCCESSFUL FARMING IS TO MARKET MORE ON THE HOOF AND IN THE FLEECE.—MORE FINISHED PRODUCT.

The farmer who converts his grass, grain and all his forage into beef, pork, mutton, wool, butter, etc., feeding to stock on his land, instead of hauling to market, keeping constantly in view the enriching of his soil, is pursuing that policy in farming that will secure profits present and remote.

SHEEP HUSBANDRY.

At present no stock on the farms of Indiana, for the capital invested, are giving returns more profitable than sheep. During the past winter the discussions of flock-masters, in our farmer institutes, have, over and over again, verified the above statement. The January report of the Department of Agriculture gives to our State 1,228,000 sheep. If we had upon the farms of our State three times this number, the profits would be largely increased, and the condition of the evil improved. This would diversify our farming, check the over-production of beef and pork, and increase the short production of mutton and wool.

Judge William Lawrence, President of the Ohio Wool Growers Association, in a recent speech before the Farmers' Congress, at Montgomery, Ala., said:

	Pounds.
The wool clip of the United States was	240,000,000
Our importation he gives as follows:	
Imported combing wool, equal to unwashed	12,000,000
“ clothing “ “ “ “	35,000,000
“ carpet “ “ “ “	150,000,000
“ waste, etc., “ “ “	26,000,000
“ woolen goods “ “ “	156,000,000
Total importation	379,000,000

To supply this lack of our people would require 60,000,000 more sheep in the United States. At our institute meetings many farmers have expressed a desire to engage in this promising industry, but say they are barred by reason of the ravages of dogs upon the flocks. Here is a live issue for the legislature of our State to decide. Shall our farmers be protected from dogs in the development of this important industry? Or will our modern solons decide that greater benefits will accrue to our State from dogs than from sheep?

MORE GRASS AND BETTER STOCK.

Grass and stock are the prime factors in successful farming.

M. B. Waugh, one of Montgomery County's most successful farmers, said in a recent farmers' institute: "A field of blue grass was worth as much to the farmer as a field of grain, and the farmer who would plow a well set blue grass sod was a fit subject for the asylum." It is a mistake to plow nearly all the land and grow light crops, which such a system gives, then be compelled, if stock is kept, to feed more than half the year.

CLOVER THE FARMER'S FRIEND.

Profitable crops of clover can be grown with benefit to the land. Clover hay is rapidly growing in favor. For sheep and cattle, young horses, mares and colts, good clover hay has no rival. Clover seed is often a very profitable crop. Clover affords abundant, succulent, nutritious pasture. It is the cheapest fertilizer for the general farmer. Logs, brush and briars should give place to blue grass. The waste places of the farm should be rendered profitable. There is but little land in our State but can be made turn a profit to the farmer.

"Let our rich valleys smile with wavy corn
Let flocks and herds our rising hills adorn."

CATTLE AND BEEF INTERESTS.

For a few years the beef interest has been much depressed. The number and quality of cattle on the market, the manipulations of the dressed beef combines, have contributed to this end. Trusts and combines of all kinds, where formed for the purpose of controlling the price of any commodity, are a menace to trade, conspiracies against public good, and should be suppressed by law. The people are demanding this, and before the march of enlightened public sentiment that which is oppressive must fall. With the Western ranges at their maximum production, the indiscriminate slaughter of veal calves, the increasing population and hence increased consumption of beef, we predict the bottom of dull prices has been reached. From the blue-grass and grain-growing States must come the best beef, and the demand for such beef will give profit to the intelligent producer.

The *Indiana Farmer*, on good authority, states that not ten per cent. of all the cattle offered for sale in the Chicago market (the great beef market of the world) graded from "good to choice."

The whole range of prices in this market during the past year was from \$1 to \$6 a hundred. In this wide range of prices cattle were sold at a loss, small profit, fair profit, and good profit.

HORSES.

There has always been good profit in intelligent breeding and rearing of horses. Good judgment in determining the demands of the market, and diligent effort to supply that want will continue to be rewarded with good results. In no department of farming is there opened a wider field for sound wisdom and sound economy than in raising and marketing horses.

SWINE GROWING.

Time will forbid a discussion of this important branch of profits to the farmer. To succeed, eternal vigilance is demanded, early maturity essential, feeding on grass most profitable.

DAIRY INTEREST.

This great industry is being pushed to a higher development, with more intelligent enthusiasm than any of the great industries of the country. It has already taken a front rank with the great agricultural industries of the land.

FACTORS IN FARMING.

In conclusion, let me summarize the main factors that are conducive to maximum profits in farming:

Intelligent Thought.

Sound Economy.

Better System.

Improved Conditions of Soil.

Good Seed and Better Tillage.

Better Drainage.

Market more on the Hoof and in the Fleece.

More Finished Product.

Better Stock and more Grass.

Better Care of Stock.

More Sheep and Clover.

More Blue Grass Pasture.

A wise and diligent application of these factors will largely augment the profits of the farm.

DISCUSSION.

Dr. E. H. Collins, Mattsville. I remember on my way to the Institute, at Carmel, one remark which Senator Mount made, speaking to me while traveling over the State of Indiana. He thought that farmers impoverished their soil in many instances by taking away, and adding nothing in return. In other words, we grow a crop of grain, ship the seed and burn the straw, or haul it to the woods instead of putting it on the field. When we get a crop of corn we sell it, rake the stalks and burn them,

and don't sow much clover. If we feed corn on the farm we get a return that adds to its fertility. In speaking of the vast amount of waste of corn in the Mississippi Valley, we hope to have more fully developed in the shape of silo work, so this waste of corn fodder would have a practical solution.

Isom Wray. I would like to inquire of the Senator if vegetable mould is more productive of vegetation than mineral manures?

Senator Mount. The mineral is very beneficial, but is soon exhausted; it is the vegetable that we need more than the mineral.

Mr. Wray. The Senator don't understand me. What produces the crop? Does it come from the vegetable or mineral?

Senator Mount. That is a scientific question. It is from both.

Prof. W. C. Latta, Purdue University. I did not quite catch the drift of the question, but if the gentleman will repeat it I may venture an opinion. (The question was repeated.) Senator Mount has answered the question quite fully; both are essential, and I hardly know which predominates.

Question. I would like to hear from the President?

Dr. Ryland T. Brown. This is a big question, a question involving the whole of agricultural chemistry. Vegetable mould has a mission, and that mission is to act as an absorbent of the gases of the atmosphere, and holds them in such a way and is absolutely necessary, especially those elements obtaining nitrogen and ammonia-forming gases absorbed by vegetable mould. True clay soil will absorb if made fine, but vegetable mould is a great absorbent of nitrogen gases. All this absorption is measurably of the vegetable kind, and will not work without the presence of potash and phosphates, and a few other minerals of less importance. They appear to be the force that enables the plant to exercise the selective power of the parts that enters into the composition of the grain in a small proportion which is necessary to the formation of the grain.

J. W. Apple. The question with me is whether by better tillage and better soil we can overcome these natural drawbacks. We have fields of wheat good a few weeks ago that

now seem apparently dead. Last year much of our corn was killed with the white grub. With all our intelligence and improved implements can we overcome these things?

Senator Mount. This can be overcome with intelligence and thought. We see this illustrated by some farmers living close together; one has a greater yield of grain than the other, yet the lay and quality of the soil is the same. This man of superior intelligence is keeping up the fertility while the other is not. But overcoming the elements of nature we can not do.

John Clore. There is a difference in variety of wheat in standing winter, and now is the time for us to decide which kind stands the winter best; but in doing this a man must exercise judgment in his examination. I notice there are great differences apparent where there is sown two kinds in the same field. One of my neighbors got seed wheat of me last fall and sowed it right alongside with his own, which was the Fultz. That which he procured from me was the Gold Dust, and the difference is perceivable clear across the field.

Peter Rabb. We have two fields. An acre in one field is perfectly green, while in the other it is dead.

I. N. Cotton, Trader's Point. I have a field of twenty acres sowed to wheat last fall, half of which is Fultz and the other half Gold Dust. The Gold Dust is looking best. Whether it is the class of wheat I don't know. I broke the ground for the Gold Dust in June; the other was broken the last of July and did not melt down. I am at a loss to know whether it is the seed or condition of the ground, but I am inclined to think it is the condition of the ground.

Hon. E. J. Howland. I can take Mr. Cotton to a field of mine where there was no difference in time of breaking. Seven-eighths of this field was sowed in Gold Dust wheat, and a strip of six rods of Fultz through the middle. A visible line of demarkation is seen. The Fultz is killed and the other is not.

Mrs. Virginia C. Merideth, Cambridge City. I see Mr. Becker, of Tipton County, is here. He is one of the most successful wheat raisers in the State. I would like to hear from him.

Mr. Becker, Tipton County. I will say that one of my fields is quite fine looking, while the other is frozen out. Both were put in, in fine condition, and the same methods of sowing pursued and same quality of soil. It was the best looking field of wheat in the neighborhood three weeks ago; it is no account now. It is called English Mediterranean.

I. N. Cotton. My wheat was not damaged until this last freeze.

Prof. W. C. Latta. In experimenting with some fifteen varieties on the College farm there is quite a difference in yield, some giving double the yield of others.

The Chair appointed the following Committee on Resolutions: Senator J. A. Mount, Prof. W. C. Latta, Sylvester Johnson, J. W. Apple and J. W. Robe.

Adjourned to 1:30 P. M.

AFTERNOON SESSION.

President Brown called the Institute to order precisely at 1:30 P. M.

Isom Wray offered the following, which was adopted:

Resolved, That the thanks of this institute are due and are hereby tendered to the ladies of the Marion County Society, for the elegant lunch spread to-day for the benefit of their guests from abroad.

E. L. Furnass, of Furnessville, delivered the following:

FARM DAIRYING.

Farm dairying, an old institution, grown reverend with age, is called upon in this iconoclastic latter day, to defend its right to perpetuation. Coöperative dairying and creameries, so-called, new measures of the new times, are said to be undermining its chances for existence and usurping its office, and if it really be true that it is not securely intrenched in sound principle, it must surely go. New methods and devices are changing and revolutionizing other industries, and farm dairying must fall into line, discard the old, and bring in the new, or surrender to the inexorable law of the survival of the fittest.

It is yet an undisturbed fact that cows must be kept on the farm, if anywhere, and this controlling advantage held by the farmer, of being producer at first hand of milk, should unquestionably enable him to dispose of it profitably, not only as

milk, but also in the forms of butter and cheese, with very many points in his favor over the factoryman. Success in the matter depends entirely upon the way of doing it.

Dairying is sharing in the general depression, prices of dairy products are discouragingly low, and seem destined to continue going permanently lower. The main chance for hope to-day is in cheapening, materially, cost of production, and in stimulating consumption and demand by greatly improving the quality of the product; it is greatly in the interest of the dairy farmer that milk and butter and cheese not only be of the best, but that they reach the consumer in the best possible condition, in order that they may be more liberally used and thus increase the demand. Cheapening the price will also increase the demand, and it is sound business policy on the part of the producer to make the price as low as is compatible with reasonable profit. Struggle for maintenance is as sharp within the lines of dairying as without; the effort required to succeed in it, will give success equally as well as in any other line of farming. Prevailing low prices of farm crops is leading many to change their usual plan, and they are searching for some easier and better way of making the work of their hands profitable. The idea is prevalent that there is big money in dairying. My paper is not for the purpose of encouraging anyone not now in the business to enter it, but to help as far as it may those already more or less engaged in it. Of course circumstances will decide whether it will be better to send the milk or cream to a factory, coöperative or otherwise, or to make it up on the farm. To my mind, under proper conditions, the arguments in favor of farm dairying, as against the factory plan, are many and forcible, and I speak from several years' personal experience.

The responsibility of a private dairyman is pointedly fixed. Thou art the man, stands out clear and positive. If there be an evil or fault of management, he can not cover it up at some one else's expense, or lay it upon the shoulders of another. Reward for good work will surely find him without aid of direction, and mismanagement will bring disaster and rebuke straight to his door. He has the full charge of everything, from beginning to the end. Care of the cows, handling of the milk, and has the milk pre-eminently at its best estate. It is his moneyed interest to keep out all bad influences, and to have everything done at its best; an ever-acting and potent stimulus. At the factory the supplies of milk are many—the more the better—with no possible way of thoroughly and accurately inspecting the quality and purity of the milk. The stimulus for each patron, be he good or be he bad, is to furnish as large a quantity as possible, with no other check upon him as to its quality or cleanliness than that it will be taken at the factory door. If the ninety and nine patrons bring pure milk, it may all be contaminated by mixing in the filth of the one-hundredth man, and it is not hard to suppose that at least one man in a hundred will do something that he ought not. There may be much corruption in milk, as factory men know to their sorrow, that may not readily manifest itself to the eye. There is a constant antagonism and struggle between those furnishing milk to a factory and the proprietor; they have, they think, many well founded suspicions of each other, and some unpleasant tales to tell. The private dairyman has undoubted advantage over all other systems, if

he makes a specialty of the work, and carries it on largely enough to warrant availing himself of the new methods and improved machinery, and one of the greatest improvements of the day is in the cow herself.

It goes without saying, that it is hard work, and very irksome, in the fact that it confines one so steadily and continuously, leaving little time for recreation, or anything else. It is every day work and nearly every hour, rain or shine, week day and Sunday. On this account it is very objectionable indeed, and gives one of the strongest arguments in favor of sending the milk to the factory. The factory system has great merit, and will undoubtedly be greatly improved. The business there is made a business, is carried on largely, machinery and method are used, and the large output is uniform in character, which makes it more saleable, even though the quality may not strictly be of the best. Great improvements have been made in dairy machinery, and are still being made, and where the end will be can not now be even imagined.

The new machine, called the Butter Extractor, promises to make a great change, if not a revolution, in butter-making, and may deal the severest blow yet given to private dairying upon the small scale. It takes the new milk, fresh from the cow, but cooled down to churning temperature, and extracts the butter continuously at the rate of a pound a minute, leaving it ready for packing as soon as washed and salted. People intending to make costly changes in the matter of dairying would do well to wait a little and see what the extractor is going to make possible.

It is said the capital invested in dairying in the United States is five times greater than the amount invested in banking, being \$700,000,000 in the one and \$3,500,000,000 in the other, and yet the largest part of dairy work is done at a loss, as it is usually allowed to carry itself on. With the majority of cow-keepers it is a slipshod, unmethodical and unremunerative drudgery, a dead-weight in itself, and an injury to the better way of dairying. As has been well said, if one-half of the cows of the country were struck by lightning and killed instantly, it would be to the profit of their owners. A cow that costs \$35 or \$40 a year to maintain and that returns but \$30 in products, can hardly be considered profitable, and yet the cow may not be to blame. Farmers make and sell butter at less than it costs to produce it and don't even know that such is the fact. There is but little hope of much that is called farm dairying.

The dairyman should recognize the fact that butter and cheese grow in his fields. With the waving grass and oats and clover and corn he can count from 200 to 1,000 pounds of butter to every acre, which may be more or less, according to the skill with which his butter crops are handled. If allowed to over-ripen and become indigestible, woody fibre, or to be damaged by storms, or from dampness to must and mold, or to overheat, the loss is great, destroying all or a large part of his profit, for the butter is in the crop, and in some future day invention may find the way to secure it without the aid of the cow. The dairy chemist will yet extract the milk and butter and cheese and milk sugar directly from the plant. At present we do well to rely upon the cow, and she, to all intents, is the milk machine, and one that requires skill and judgment to select and properly manage to

get the largest possible portion of butter or cheese from the crops and at the greatest profit. Machines, to do good and profitable work, must be kept in good condition and run at full capacity, and the cow-machine is not an exception.

There are to-day three leading, distinctively dairy breeds. The Holstein, Jersey and Guernsey, and some one may want to add to the list, which of course they are at liberty to do, but the line must be drawn clearly and sharply between dairy breeds and beef breeds. It may be a notion, or it may be something much more than a dairy cow, or even a calf designed for the dairy, should never be allowed to lay on fat. The habit to be developed and cultivated so that it will be even more than second nature, is to put the fat into the milk pail where it will do the most good. A pound of butter fat there may be good for 25 or 35 cents; put on to the cow herself in the shape of tallow it may be worth only 3 or 4 cents, unless recovered finally by the butterine maker and worked up with hog fat into a fraud. A good milking cow does not make the mistake of getting fat, but will remain thin and bony, alive with nervous energy, always ready to extract all the butter there is in the material given for her disposal, and generously hand it over. She should have a tempting variety of food, and all she can properly care for. She must be kept perfectly comfortable and "at peace with all the world and the rest of mankind," with warm, thoroughly ventilated, brightly lighted premises. Harsh words and blows mean loss of butter. A man who kicks his cow, kicks indirectly but surely, money out of his pocketbook; because she is an unreasoning animal she needs a reasoning person to have charge of her. Cows quarreling with each other over their food misplace nervous energy with a loss in their milk yield. My neighbor says cows will stand it well enough out of doors, even if it is cold and stormy. Yes, the cow will stand it, but the owner can not, for there will surely be a loss in the milk yield. After the milk is obtained then comes the struggle to get all the cream it contains, and then the struggle to get all the butter from the cream, and then to put on market in such condition as to be able to claim and secure the highest possible price. I tell my customers it is for their interest to pay me good butter prices that I may be able to make the butter equal to the price.

Milk should be set for creaming immediately upon being drawn from the cow; any delay in this means loss of cream. I emphasize by saying you can not get your milk to rest and cooling too quickly; carting milk for miles over the country in hot weather and cold weather to reach a butter factory injures its quality so that it can not make so good butter as if made on the farm. Milk set in deep cans in water at a temperature of 45 degrees will yield the most of its cream within twelve hours. Cream should be kept uniformly cool, but not lower than 50 degrees, until ready to ripen for churning, it should then be warmed to 65 degrees and made somewhat sour by using a starter; churn at 62 degrees. Stop the churn when granules are fully formed, draw off the buttermilk, wash until perfectly free from milk, salt and pack immediately; don't put any streaks into the butter, and you will not have to work them out. Keep thoroughly covered from the air and in a cool place, but do not permit butter to freeze if you place any value on choice butter flavor. Have regular customers and supply them regularly, being sure never to be out of butter when they want it. Make your butter so good that your customers will recommend it to their friends. You will then have a demand for

all you can make at the price you deem best to put upon it, which should be the price of the best butter possible to make. It is said that a good dairy thermometer is essential in dairies, and that a nose quick to apprehend bad odors is indispensable, but far above and beyond *all* these is the necessity for a lively and delicately balanced conscience. Conscience is the one thing needful that you may perform every manipulation in your work in such a manner as you would if you knew the eye of your customer was all the time upon you. Keep yourself and your establishment in such trim that you will be rejoiced to have visitors drop in upon you at any time.

The great abundance of food staples makes prices low for them. Very strangely complaint at this state of affairs seems to be almost as bitter as if there were want and destitution in the land. The people's eyes stand out with fatness, and they have more than heart could wish. In spite of low prices the general condition of the people was never better. Comforts and luxuries abound, and are generally distributed; people were never better fed, or clothed, or housed, or had more privileges and superfluities, or had better means of seeing and hearing and traveling, or were more exempt from hardships. There is no devastation by famine, or pestilence or war. The world is at peace, and for many years energy has been given to peaceful production. The increase in skillful devices, and the developing and multiplying of working power by engines and machinery, has wonderfully increased the capacity for production; large areas of new and fertile lands have been entered upon and operated, perhaps too soon for the general welfare. Cheap and ready transportation has brought the products of distant sections into active and disastrous competition with the products of other sections and driven them from their own markets. All these are disturbing influences which will require time to regulate and adjust, that order may evolve from the commotion and good readjust itself and follow as surely as the day follows the night, the calm and sunshine succeed the storm. Stagnation is death, but activity is life. Man develops by struggle and grows strong from effort, and depression is followed by elevation as high as the depression was low. Many of us have seen much gloomier times than the present, when prices were not only low, but products would not sell at all. Now everything will sell at some price and bring good money. There never was a time when it did not require serious effort to get along comfortably in the world. The assertion that the rich are growing richer in this country is unquestionably true, but that the poor are growing poorer is not true in any sense whatever.

We have a large and continuous stream of poor people migrating to this country, and their condition rapidly and radically improves. The rich and the poor are both growing richer to the great benefit of all. The rich man of this country has no class legislation in his favor; he is a man simply on his merits as a man, and almost without exception started in the world poor, and by industry, skill and economy, made himself wealthy, and has formed such habits of activity that he continues in action and puts his money at work, building and operating factories and shops, railroads and other large enterprises that give employment to hosts of men, that creates a market for farm products, and general prosperity results. Good times are coming and will surely overtake us. We have a glorious country, good government and grand institutions. It really seems as if we were

the chosen people of the Lord, and yet we complain and seem never satisfied. We attribute our trouble to tariffs, trusts and taxes, anything and everything rather than to our own want of skill and energy.

A man who keeps a cow that yields only one hundred and fifty pounds of butter in a year, when she might give three hundred pounds, has more cause to complain of himself than of anything else, and can never expect to be prosperous so long as he maintains such a prohibitory tariff on prosperity.

DISCUSSION.

Hon. Milton Trusler, Bently. When we think of the rapid growth of this country, we feel proud that we are citizens of the grandest republic on earth, with its vast resources and diversity of interest, and we have a population of near sixty millions of people. I believe we are the wealthiest nation on the globe, and have an aggregate of wealth more than Russia, Germany, France, and greater than Great Britain and Australia. Agriculture has been the principal factor creating that wealth. The majority of this wealth was created by agriculture, but this wealth seems to have drifted into the hands of a few. This is a question for the farmers to solve to-day. That man who will legislate and solve that question in the interest of the farmer, will be the greatest benefactor of the age.

Chas. Howland, Indianapolis. I endorse the sentiment of the paper, but we must draw the line somewhere. We want to know what is the best for dairy purposes. He presents three distinct breeds. We want to know which of the three is the best. We want to buy that cow which will make us the richest. I want this question fully discussed that we may come to some definite understanding about it.

E. L. Furnass. My opinion is one thing, and other men's opinions another. There are individual Shorthorn cows that can not be excelled, but to take an individual breed to-day I believe the Holstein is the best. (A voice—I don't believe it.)

Mr. ———. The Jersey is good, but I think the Guernsey is better. There is an objection to the Jersey, the teat is too small. One reason I prefer the Guernsey before the Jersey, she is a larger framed cow and large teat, and butter does not require any coloring. It hurts my conscience to use butter color.

This is the reason I prefer the Guernsey. The Holstein, as proved at Chicago, yielded the largest amount of butter to the cow, but the analysis of the milk had from the Jersey cow at Chicago, was richer in fat than the Holstein. Yet coming up in dollars and cents the Holstein was far ahead. Their argument is that when you get through with the milk she makes a larger beef to sell. The farmer objects to the Jersey on account of size.

Prof. Latta. I do not know whether I understood some of the points of the paper, but the point I wish to make is this: Is there a place to-day in Indiana for a profitable dairy? If so under what conditions and market?

E. L. Furnass. I think you should make your butter so good that your customers will want it. In the days of oleo-margarine some thought the butter market was being destroyed by the great amount of bogus butter put on the market. It was not injuring me. I had friends who had confidence in me, and if I said I had good honest butter they believed it, and for fear they might get this bogus butter they sent to me for mine. I would say to them, "My butter is worth so much to me, and if it is worth so much to you you can have it." Right in the spring I have been able to raise the price of butter; then I say, "I want a little more for my butter." I never make a contract for a definite time. I used to think it was best, but have found that it is not. I now say, "Here is my butter; if you want it take it." Two of my customers sent me five cents per pound more than I asked. They said they thought it was worth that.

Mrs. Virginia C. Merideth, Cambridge City. Farmers should take note that there is much in keeping accurate accounts in the way of receipts and expenditures. Looking from that standpoint the Shorthorn is underestimated as a butter cow. If we go to the record we find last year, in New York, two Shorthorn cows that made three pounds of butter per day each. That is better than any dairy breed shown last fall. There are many things to take into consideration as to the best and most profitable breed for the farmer. The Shorthorn for the farm is perhaps the best. The butter of the country is made on the farms,

but in many cases the butter is not as good as it should be ; but perhaps that is the fault of the farmers' wives who do not make it good. The machine he spoke of in his address is a good thing just in proportion as a man is intelligent, and applies to the dairy altogether more than anything I know of.

Mr. Furnass. I know of no butter taken to market, without any coloring process, that will compare with the Jersey. It will stand up better than any other.

Peter Rabb. I favor the Jersey cow for butter purposes. It makes better and more butter on less feed than other breed.

Chas. A. Howland, Indianapolis. We have both Shorthorn and Jersey cattle. We make butter from both and have no trouble in selling what we make. If we made ten thousand pounds more than we use I apprehend we would have no trouble in disposing of it. My wife makes the butter, and the quality is such that the people send out to my house for it. We don't have to make calls at the back door, but we take it to the grocery, and the word gets out and they come after it.

John Gloré. I only want to emphasize the remarks of Mrs. Merideth, we must keep an account of the receipts and expenditures. The Jersey people have kept an account of one side, and that is the butter, not saying anything about the calf. The Shorthorn has a calf that is worth something. We can come very near the Jersey in butter and beat them on the calf. If a man wants to buy a calf, he invariably wants a Shorthorn.

S. W. Dungan. It is the quality of the article we want to bring out. We don't care what kind of animal we get from, the person using the butter don't care what breed of animal the butter is from, so it is all right in quality. I have been on both sides of this question, I have sold to others and have bought myself. What we want to-day is a better quality of butter. I have found in selling anything that much depends on the quality.

Hon. E. J. Howland, Indianapolis. There is a point not yet touched on. It is a well known fact that you can not extract from the milk that which don't enter into the milk. It don't

require so much to feed a Jersey as Holstein, and my experience is after trying the Jersey, Shorthorn and Devon, taking into account the quantity of feed, I can make more butter from the Jersey than any cow I have tried. The Holstein ought to make more butter, but she don't. In the production of butter the Jersey will produce more than any other breed, unless it is the Guernsey, with which I have no experience.

Mr. Furnass. I want to call attention to the fact that the butter is already existing before the cow sees it; the butter grain is in the food, so many pounds to the load of hay, or so many in the growing grass—the amount depends on what she eats. I had a gentleman come to see me some years ago; he was a thrifty Englishman; I was raising beets at the time and he asked me many questions which I answered to his satisfaction, but just as he was going away he said: "Now, Mr. Furnass, how much hay do you save by feeding these beets? I told him, "instead of saving hay, my cattle eat more, I wanted them to. The beets enable them to eat more." He said, "I don't want any of your beets then." The man who boasts of making butter without feeding, might just as well boast of a machine to make stockings without yarn.

J. N. Latta, of Haw Patch, read the following paper on "The Ideal Horse for the Farmer."

THE IDEAL HORSE FOR THE FARMER.

One does not need to have been an extensive traveler over our beautiful and fertile State, or to have attended many of the Institutes, without becoming convinced that our people are very generally aware that with the rapidly improved farm implements of the day, together with our greatly improved highways, that we have really the cart before the horse. To derive the greatest possible profit from the use of these various improvements we must

BREED A MOTIVE POWER

Especially adapted to them. We want two horses to market one hundred bushels of wheat and return in the same time that our present teams require to market sixty bushels and return. We want four horses that will, when hitched abreast to a gang plow, turn two furrows of fourteen inches each in width and eight inches

in depth instead of our present teams of three horses with their ability to turn only one furrow of sixteen inches in width and eight inches in depth. We want one of these horses to be able to pull our surreys with four persons in it eight miles an hour over our improved highways.

That you will dissent from these propositions, is to be expected ; not because of their want of truth, but you have become prejudiced against the advocacy of a race of

GENERAL PURPOSE HORSES.

What is your most useful plow but a general purpose one? What breed of chickens do you keep? Those that give you the best results in eggs and meat. Is not your most profitable cow the one that would be called a general purpose one? What are you, brother farmers, but general purpose men? You should be an artist, and a mechanic, a botanist and an entomologist, a statesman and a preacher; and you should know enough about law to keep out of it. Yet you will persist in believing that this animal, which in intelligence, bravery, docility and general usefulness is second only to man, shall be bred so as to practically limit his varied powers to the possible accomplishment of one line of usefulness. Importers of draft horses and breeders of standard bred trotters have been wise in their day and generation in making us believe that there should not, neither could there be, a race of general purpose horses; but when we recall the fact that at one time there was but one race of horses, and remember that the draft horse, the standard bred and the Shetland pony are the product of man's skill and necessity; that the blood of the Shorthorn and the Jersey was the same; that all mankind had a common ancestor; that all variations in the vegetable and animal creation are due to man's skill, spurred on by his necessities—she has been called the "mother of invention," but we may be justified in doubting this in the same manner that we question that "knowledge is power," but we must know that knowledge applied will give us power over our necessities. Let us apply the knowledge we have.

The simple fact that there never was such a race does not prove that there could not, or should not be. Indeed, to my mind, it has a much greater significance; it is proof positive that the best farmers have found a way of producing this most necessary individual without waiting the longer process of forming a race. The results attained by one direct

CROSS BETWEEN TWO DIFFERENT FAMILIES

Are sometimes worthy of our highest admiration, and often very perfect types of this race that we most desire. But an individual animal is not a race, and desirable as they most certainly are, yet we should not be content until we have those that will reproduce themselves. Let us, in imagination, conceive a perfect specimen of a road, a draft and a sale horse combined, having some of the qualities of bone, muscle and spirit of the road, and none of the superfluous flesh and hair, or the draft, together with all the better qualities that go to make a perfect sale animal, namely, perfect color, symmetry, and absolute soundness.

POINTS OF THE IDEAL HORSE.

Shall we agree that this ideal shall be a bay, having a small star, all other points black? Shall he be about fourteen hundred pounds in weight, and sixteen hands high? Certainly a rapid walker, having that sprightly motion that would denote a determined spirit. Face and eyes would indicate a fearless, yet tractable disposition; rather wide between shoulder points, giving room for a well developed breast; bones of the fore legs below the knee stand straight with the body—a very important point. A general side view of ideal would denote an animal of very great strength, rather than of weight; usefulness, rather than mere beauty. Head not small, but well chiseled; nose straight; jaws heavy and wide apart; neck rather short and straight, not long, thin and weak; shoulder blades lay well back, and are not high; arm, shoulder and stifle muscles very heavy—their very profusion should give to ideal an uneven surface rather than a smooth, even one; legs somewhat short, very broad, flat and clean—no long, superfluous hairs; good hard, large sized feet; well sprung ribs; back neither long nor short; high at the coupling; hips long and deep, set at a perfect angle, neither high nor much drooped; tail nicely set, brush heavy.

I admit that this is

A MEAGER PICTURE

Of a somewhat rare animal at present, and yet, you and I have seen horses, several, perhaps, whose description would nearly tally with this ideal. As was stated before, there is no race of them, and until such time as some public spirited citizen, who, having money and talent, shall demonstrate by the actual production of this ideal race, it would be useless for us to spend much time in speculation upon the subject. That we are blessed with as great a number of varieties of the equine family as could be wished from which to choose in making any cross, no thoughtful person can deny. Candidly, there are but

TWO FAMILIES

That are worthy of consideration by the intelligent farmers of Indiana, and these are the draft and roadsters. Both are distributed with the most lavish profusion all over our beautiful State—every cross-road having two or more of each—and we cheerfully bear witness that we would not willingly part with the best specimens of either for various reasons, but principally because of the hope that they contain the necessary material, rightly combined, whose offspring should be our ideal.

HOW SHALL THEY BE COMBINED?

Ah! That is the stumbling-block that our people are continually falling over. Surely it is not from the lack of knowledge but because we do not use our common sense in its application. The power is ours beyond all question. We are the weavers, the shuttle is in our hand, there is our pattern. Here, in almost endless profusion, are the materials to be used for our warp and woof. Why not take this dark bay mare as a type of one worthy of being the dam of ideal. She is sound,

free from disease, and has a good clear color which is not spoiled by an excessive amount of white, either in the face or upon the legs. She is very gentle and trusty, and while her head is large it is comely, neck straight, her shoulders stand straight, very wide between the points, having a very full breast; she is large in the barrel, rather long in the back but strong in the couplings, hips deep and massive but not drooped beyond the line of symmetry; her legs are very heavy, having more superfluous hair than is good for them, but not more than we should expect from her breeding. Her dam was a twelve hundred pound road mare, bay in color; her sire, an eighteen hundred pound Clyde, brown in color, with very little white. Ideal mother should weigh strong fifteen hundred, and the careless observer would say that they matched well, but the real difference between them is very great. Ideal's movements are nimble while his mother's are sluggish; he looks sharp; she, sleepy. Ideal looks strong; his mother, big. His legs are free from long hairs and are quite thin; her legs are beefy and covered with long hair. Ideal's sire should be of the same type, only more smooth and about two sizes smaller, except in height (he should be about sixteen hands in height), and in weight about twelve hundred pounds. He should be a high spirited, bold moving

STANDARD BRED ROADSTER,

And an animal of much substance and fine quality, with more than an average amount of beauty, having no malformed joints, twisted legs or vicious habits.

In color, a dark bay, with little or no white. His legs and feet should be particularly good to effect, as much as possible, the poor quality of those of the dam. I do not deem it strange, but logical, that these animals, being both clear and clean types of these two races, having something of the same qualities, and being of the same color, should combine their stronger characteristics in this ideal.

Quality, action, spirit and beauty of the sire, and size and gentleness in the dam, should produce size, strength, symmetry, and a sufficient amount of spirit in the offspring.

I have had the pleasure of

SEEING THE PRODUCE

From such a cross, and I feel warranted in saying that if you will try it thoroughly you will be convinced that this ideal is, indeed, the prince of horses, being able and willing to bear the various burdens falling to his lot with credit to himself and master.

It has been said that "like begets like," but you will find that like is much more certain to beget like in malformations, bad colors, diseases and blemishes, than in pure colors, perfect symmetry, and absolute soundness.

NOW THE QUESTION COMES

To us all, shall we remember and profit by the knowledge we have obtained, and thereby elevate our calling, or shall we continue to close our eyes, as in times past,

and throw these various shuttles backward and forward, in and out, hither and thither, without thought or reason, and yet expect the result to astonish the world in beautiful colors, perfect symmetry and absolute soundness?

You have been breeding from greys, and from baldfaces with white legs; did you really expect to get a bay or a brown with only a white star?

DID YOU REALLY EXPECT

That your ringboned, spavined, pigeon-toed mare, would, if bred to a curby, nigger-heeled, seamy-footed horse, produce a colt with perfect legs and feet? Did you breed to that wind-broken, heavy brute, because of your admiration for that harmonious sound, or because it was so very cheap? Why did you breed that balky mare to that horse that has to be led with a curb chain and a pole, whose so-called playfulness causes him to tear the clothes from his groom in his supposed effort to kiss him, who strikes his owner down in the very laudable efforts of shaking hands, who is so very coltish that his groom cautions you not to go behind him, for he is very busily engaged in trying to learn to stand upon his front legs, and in his efforts he might kick you; not intentionally, oh, no! he is the kindest horse in the whole world, would not hurt a louse (I guess not); but you must have believed this, else you would not have patronized him.

BUT THE COLT,

Does it meet your expectations, or did you have any? I suppose that it is so very, very kind that it has only broken all your old harness up, so that you might have an excuse for the purchase of a new set. Possibly you will say that he was sent as a cross to test your religion; should you look at it in this light, then you should plume yourself upon your success as a breeder, for you have indeed scored a very great hit. If there is any other one thing worse for a farmer to do than to patronize a grog-shop, and let his wife split the wood, it is the reckless use of this power, given us by an all wise Father for the benefit of mankind. Oh, folly! thou art wisdom to the fool, and fool thou art wisdom to the wise.

SHALL WE STAND LIKE MEN

And declare upon which side we will be numbered, or shall we drift without compass or rudder, and keep up the same old whine about our bad luck in having colts, with bad colors and malformed limbs, runts or mountains of flesh? Shall it be grease-heels or sound legs, shall it be seamy feet or smooth ones, will you have muscle or flesh? Is it to be intelligent-activity, ox-stupidity, or mule-deviltry?

The State Board of Agriculture is or should be the mouthpiece of improved agriculture, and if we are to have a race of these horses, worthy to bear the name, I would suggest that the State Board protect this class, with a rigid set of rules, clearly defining their necessary characteristics, and absolutely barring out all bad colors and markings, malformations and unsoundness, even if only one animal

should be shown, that was entitled to a premium. These rules would have a two-fold use; first, in the dissemination of knowledge; secondly, in giving uniformity to the decision of the judges. Could the Board be induced to adopt this course, it would be safe to predict that within fifteen years we should be ready to issue a stud book, and then who would question our right should we name them "Indians."

DISCUSSION.

Hon. I. N. Cotton, Trader's Point. I am not much of a horse-man. If we take the ideal horse, I think I come as near having two as anybody; they are crosses; the dam was a half Norman, bred to a Cleveland bay horse. They were three years old last August; there is not a white hair on them, and they were from gray mares. That cross strikes me as making a heavy driving horse; I think we need more of that kind of horses; I have generally kept a heavy team and a light one for driving. But the farmer needs a general purpose horse. We want a team that can go at a reasonable gait, and haul 75 to 100 bushels of wheat ten or twelve miles without fatigue. I remember the time when 25 bushels made a good load, but we don't take now less than 75 bushels at a load.

Hon. E. J. Howland, Indianapolis. More than half the horses in the United States are on the farm, and used for that purpose, and this class of horses should be bred for the farmer's use. As long as we breed horses there will crop out some fast ones, and some extra heavy; but there is always a market for the general purpose horse. Heavy horses are used for draying in the cities, and light ones for driving; but a general purpose horse is the best for the farmer to raise.

E. H. Peed, New Castle. The paper just read don't speak of the most profitable horse to raise and for the farmer to use. I concur with Mr. Latta as to his ideal, if possible to produce, but they are unprofitable to raise, for he would get too many blanks. He is really a two cross horse. It is risky to start out with two crosses; you may get one good horse but you would be breeding too much in; I would stick to the thoroughbred in every line.

J. N. Latta, Haw Patch. The standard bred is nothing but a cross. I believe that intelligent combination is worth more to the farmer than long pedigree in any stock, that intelligent combination is what produces races. If we find that which we want, produce it, which is the way everything has been produced. A direct cross *may* produce blanks. I am a breeder of standard bred horses and cows; there are standard breeds and one standard breed of horses are a success and can sell as soon as foaled, but some others, standard bred, are a failure. It is true that race alone does not determine the value of the animal to the farmer or any one else; while blood is of high importance, it is not of as great importance as individual merit.

Mr. Peed. Can you produce a breed absolutely certain?

Mr. Latta. Yes, sir; if you take this mare that I speak of and breed in the line indicated I will warrant it to be perfect. Let us reach the ultimate limit of perfection by breeding standard bred mares to draft horses, not Hambletonian, Morgan, and Membrino, and see what we can raise. I would like to see the State Board of Agriculture offer a premium for this class of horses. This is a farmers' meeting and farmers are not supposed to own these kind of standard bred mares. I am advising the mass of farmers to improve their farm animals.

E. H. Peed. If your theory is true, why do our best breeders of trotting horses make failures? He says that he can breed a standard and breed to a certainty, and can produce speed to a certainty. Gov. Sanford, who is the best authority in the United States, has failed to do it.

Hon. D. L. Thomas, of Rushville. There is one point I have often thought of in connection with this subject. I believe our State Board of Agriculture should take an advanced position and have a veterinarian to go through and inspect all horses for breeding purposes, for exhibition, and rule out all that have constitutional blemishes. This kind of horse has been encouraged to the detriment of the horses of this country.

Mr. Peed. I think that a good idea. We try to employ an expert, and rule in our premium list, not to allow any animal, unsound, to have a premium.

Mr. J. W. Apple. As farmers, we need a horse that will bring us the most money when we want to sell. All the money I have made in twenty years I have made out of horses. In raising horses we want that animal with which we can go out in the field and plow the most acres or draw a load to the city with ease, and, when we want to sell, an animal that commands a good price.

Thomas Bowles. The farmer needs some driving horses; the Percheron is too heavy, but these heavy horses do on the farm. I am breeding a couple of mares for the speed ring; the people are demanding speed with the fine horse four or five years old; \$250 to \$300, as the price of these horses, affords a lucrative business. Very few farmers have sufficient driving to justify keeping a driver, but the farmer should obey the dictates of the market. If the market of Indianapolis will pay me \$200 for a horse, I have him to sell. If you want a 2:50 gait, I have him to sell.

Mrs. Rachel Swain, M. D., of Indianapolis, submitted the following treatise on

FOOD AND ITS PREPARATION.

By tradition it is true that man first found himself in a garden of fruit, and without raiment, and with no cooking utensils; and that he made the mistake of biting a fruit that did not agree with him, and that he had to suffer the penalty of his conduct.

Is it not equally true that if we bite indigestible fruit, or in any way disobey physiological law to-day, that the penalty must follow? If the law is not fulfilled at once, and now, will not the fulfillment come to us later, or follow down the line of descent to the third and fourth generations? In the beginning it looked a very simple matter to avoid the fruit of one tree. But later on the subject grows, when myriads of trees grow and hang with purple fruit, with millions of millions of seed, each tree bearing a new variety of fruit, some bitter, some sweet, which by the tasting alone could give the knowledge of its properties, and its poison that was destined to flow into and down the great current of blood, and poison humanity to its remotest generation.

It baffles one in the first thought to attempt at more than a slight reference to a subject so full of interest, the investigation of which must needs take many generations of experiment and research, with the closest observation.

WHAT TO EAT, AND HOW TO PREPARE IT.

It involves the questions of "*How to live;*" "*What is food?*" How much—when to eat—under what conditions—the environment of each individual—his hereditary tendencies, his clothing, exercise, rest, constitution, age, business or occupation.

To start with, we read in Gen. 1, 29, "And God said, behold I have given you every herb-bearing seed which is upon the face of all the earth, and every tree, in which is the fruit of a tree-bearing seed; to you it shall be as for meat."

In this, our first written history or statement of what man may eat, we have to give it a broad interpretation; fruits, great and small, of many kinds and varieties; apples, peaches, pears, bananas, oranges and grapes, all so rich in nutritive quality that one could subsist for a long time on any one of them without much else. If cast out at sea, in the Northern latitude even, with a little blubber, fat or oil, and some one of these articles, life and health could be supported for many months.

And when we come to think of the vast fields of cultivated grains and the preparations of these grains by the "health food" establishments; preparations from corn and wheat, oats, rye, barley and rice; then add to this the vegetable and root product, with the vast supply of nuts that is destined to take the place of some of our meats at our tables and we are fairly bewildered at the thought of the destiny that is in store for mankind in the near or far future. The confirmation of this statement grows as we read from the founder of medicine in Egypt, from the pen of Clot Bay, in ancient Egypt, that "it requires as much surgery to kill one Egyptian as it required to kill seven Europeans." The cause given is "the very small proportion of *meat* in and total absence of *alcohol* from their diet," and in general their regular, abstemious and out-of-door life.

This "lesson of experience" that comes so surely, but too late, with relation to indigestible foods only enables one to formulate rules regarding the harmony of one substance with another, one article of food with another as the digestive function takes place. I refer to the mixture in the stomach, as if placed in a bowl in the sun. To illustrate, let any one of my hearers go into a peach orchard that is filled with ripe, luscious, falling fruit and fill the stomach every day for a week, and he will find that on going to the table to eat, that from the normal condition of appetite, there will be a craving for carbonaceous substances, meats, oils, nuts or sugars to counteract the acidity of the blood. If this acidity should be met with other fruit, giving a mixture or a new compound, it will increase the acidity, just as mixing wines or liquors will increase the action of the stomach, to make drunk the subject.

Food, according to Webster, means nourishment, that which goes to support life by being assimilated by organs of digestion. Ingredients, or compounds, or mixtures that find their way into the stomach are not always food. Sometimes they are destroyers or preventives of assimilation, and poison the system through some mistake or error in combination or requirement, and thus prevent nourishment and the formation of good blood.

FOODFUL, FULL OF FOOD.

"There the corn, bent by its *foodful* burdens, sheds unreaped its plenteous seed."

Corn! nothing fuller of nutriment and indigenous to our soil, should appear daily at our tables. It should be made so luscious, in cakes, pudding or bread, that its presence should be inviting to the appetite, as are its needs to the blood which it enriches.

It should be used as soon as out of the blister; it should be boiled under boiling water and served from under close cover before the aroma disappears from the grain. The corn should be to the American as rice is to the Chinese, or the potato to Ireland. Then we should be as expert in its cooking as are our Southern sisters in preparing rice; every grain stands flaky and alone.

The question of food, as related to the growth and repair of the human body, is quite too large for elaboration here, and it may be closed by saying that each and every healthful stomach, under right conditions of exercise and rest, can use up and assimilate nearly every variety of grain, fruit, vegetable and root, in addition to many kinds of fishes and meats, which in a vital sense are but vegetables and grains elaborated and condensed until they become the meat form. But in man there is a limit to the digestive function. At least this trying to digest all things in one stomach has its limit, and exhausts the nerve power. The experiment has been tried in this country until we are a "nation of dyspeptics." A few have recognized that "plain living makes high thinking," and hence the return to the simple eating as our forefathers did, where the manly constitution seemed to be without limit. And hence the discussions of "how to live," and "how to grow strong," and how we shall eat, and shall man be clothed in wool? All the animals below him are clothed in wool or hair. We have had Graham, and since his time it has been discovered that the wheat grain contains thirteen properties out of fifteen in the human body. Fruits contain the other two.

Dr. Oswell is doing much good in physical education, and Dr. Page, with his invitation and argument favoring out-door life, with some uncooked food; and the English Vegetarian Society, and the American Vegetarian Society, started in Philadelphia, and Dr. Tanner, through his own fast, has taught a lesson to the profession, and many others who are learning that two meals per day, or even one, in some cases, is all that can be taken care of. Some, again, can eat three or six times per day, or keep the reservoir (the stomach) always full, and have a measure of vitality left at an advanced age. One man is endowed with greater vitality, and can drink spirituous liquors and yet live to three score years and ten. Another with less vitality may die or go blind or grow deaf from the use of tobacco or opium at an early age. So it takes judgment rather than sense to learn how to live. "Crazy Vegetarians," we might call them honest foolish people, trying to grasp some idea that may not be unearthed for a century to come, get a pet theme and hold to it, as the first Grahamite that I ever saw did to his sheep-skin, while he ate brown bread and drank water. He needed it, too, for sticking to principle had made his bones prominent.

Agassiz happened to call fish a brain-forming food, though it is only 14 per cent. muscle-forming, 31 heat producing, and 5½ brain-forming (phos.), but a young

man writes to Mark Twain to know just how much fish he must eat, who expects to become a newspaper correspondent. He answers that "if your letter before me is one of about your fair, usual average in spelling and composition, I would suggest about two whales." In the same sense, eggs and chicken, and beef, stand high as brain food, that is, in phosphorus. But the brain to be fed must be fed along with the muscles; and good health and idleness are always opposed to each other, incompatible. Muscles grow by use, while nerves and organs grow by rest. Wheat, corn, beans and peas stand the highest in nitrates, and are most nutritious; they stand 15, 12, 24, 23, in nitrates. But since three fourths of the system is fluid, it must receive fluid or fruit in that proportion. Page refers to the horse as living, getting fat, on greens (grass) and water. Man will do well to imitate the horse in the matter of a simple, juicy, light diet when not at work, or when not in good health, substitute fruit. And use milk when it can be eaten, or taken in sips. To miss an occasional meal is good to invite hunger (Spartan sauce.)

But above all things, let the great American cook feel the importance of studying how to prepare food. Mrs. Mary Hemenway, one of the richest women of Boston, has instituted, first, sewing schools, and second, cooking schools, connecting them with the public schools of Boston, and now has Nos. 1, 2, 3, 4, 5, kitchens, with ten classes per week of twenty pupils each. She says: "I tell you, there is a moral side to this question, as well as a practical and educational." She gives an instance of the man who stops going to the saloon to get his "whiskey to set him up," and takes his nice cup of chocolate and the appetizing corn-cake, cooked by the little daughter, for his breakfast, instead of the sloppy tea and baker's bread. This appears to be one of the greatest and gravest needs of the age, of our time, and of all time, to train, and teach, and fit every school girl in the land how to prepare food. How to economize, and combine, and prepare and make appetizing the food of the family, and all the families, and of the whole country; it is of more value to the nation than all its standing armies. With this knowledge comes health, and happiness, and thrift, a trinity not to be despised.

Following are a few recipes, which I will read:

CAROLINA CORN-DODGER.

Time required, thirty-five minutes. Coarse corn-meal, 1 quart; boiling water; salt, $\frac{1}{2}$ teaspoonful. Pour the water (which must be actually boiling) on the meal, scalding two-thirds of it; stir with strong spoon, adding cold water to mix stiff enough to handle. Mould into oval cakes about two inches thick; place in an oiled pan; smooth the top with the hand wet in cold water; bake in very hot oven.

RICE CORN-BREAD.

Corn-meal, $1\frac{1}{2}$ cups; cold boiled rice, $1\frac{1}{2}$ cups; sweet milk, 2 scant cups; eggs, 1; baking powder, 1 teaspoonful; salt, $\frac{1}{2}$ teaspoonful. Put all together except the baking powder; stir and beat until the rice is smooth; add the baking powder. Put in a hot oiled pan; shake it until it settles smooth on top. Bake in a hot oven 30 minutes. It should be an inch thick when baked.

GREEN CORN PUDDING.

Time, 1 hour. Green corn, 1 dozen ears; sweet milk, 1 quart; sugar (level), 1 teaspoonful; salt, $\frac{1}{2}$ teaspoonful; eggs, 1; flour, 1 tablespoonful. Grate and scrape out all the hearts of the corn; beat in the flour, egg, salt and sugar, and last the milk. Turn into a buttered granitized pan and bake slowly for one hour, stirring from the bottom three or four times at first. Brown the top and serve in pudding pan.

GREEN CORN GRIDDLE-CAKES.

Grated corn pulp, 1 quart; sweet milk, 2 tablespoonfuls; eggs, 1; flour, 2 tablespoonfuls. Stir together the corn, egg and milk, then add part of the flour, to bind all together. Test a little on the griddle, as too much flour spoils the cakes. If needed, add more flour; beat thoroughly. Bake well on hot oiled griddle, and serve hot three cakes deep. Use a small piece of turnip or potato, dipped in cotton seed oil, for oiling griddle.

DISCUSSION.

Mr. Wray. It is a most excellent address, and I can fully endorse it. I believe the lady said that Adam made a mistake in biting the wrong apple. It was not Adam's mistake; he simply done what his wife told him to do, and we try to do the same.

Mrs. Merideth. That is what he said, but we don't know whether Adam told the truth or not.

Mr. Wray. The good book said the woman gave it to him, and he eat it.

Dr. E. H. Collins, Mattsville. The question of using pork for food has been a theme of discussion by some. At Antioch College the subject of the hog came up before the class. Professor Orden asked for what the hog was used; some said for food, when a lady turned up her nose at the idea of eating hog. But let me say the hog is a very great factor in building up our country. The hog builds our canals, it builds railroads, cuts down forests, it is a cheap food, a wonderful productive food in physical force, and has accomplished a great work. People are healthy in outdoor life, and need a warm, sustaining diet. In working on the farm, my hired help and myself, we want a slice of pork for our dinner and not beef. If the snow

flies we will take hog meat. People living in the city do not require fat meat, while those living in the country and pursue manual labor want and require fat meat, though the man who uses it freely is coarse in feature. I would ask if it could be prepared in a way more palatable.

Mrs. Dr. Swain, Indianapolis. People in different localities require different kinds of food. If we are in the north we need blubber, but if in a warm country, nature has indicated there is more variety of fruits and less of the meats, and if we take in from what we observe in the north, we eat more meat when it is cold. The time will come when the hog will go, and we will use other things in its stead. We will have our vegetable oils and will gradually dispense with fat meats after awhile. It is a matter that is worth while looking into.

Mr. John. Close. The paper dwelt quite largely on the duties of the daughters. I want to say that I have five boys and one girl. I agree that the girls have a right to learn how to cook, but it is also important that the boys should learn how, too, because there are times in a family when there is no mother or girls to cook. My daughter can cook, and she can play the piano. When I was in my teens I would sometimes slip out and do the cooking. I could dress and bake a chicken as well as any one. It is just as important for the boys to do housework as the girls, then if it becomes necessary that they should do such work they will be fitted for it. All girls should know how to hitch up a horse, for they sometimes have it to do.

Mrs. Dr. Swain. I have five boys and one girl; my boys, when necessary, help in the house, and know how to take hold and help on the work.

J. B. Conner. I know that most people have plenty of opinions, but not many facts; that is the fault of a great many criticisms. I think there is one fault in the paper; I believe it stated that the country was becoming a nation of dyspeptics. Can we sustain the fact? A very tangible and prominent business fact, according to all life insurance business, indicates that life is growing longer.

D. L. Thomas. I was well entertained with the reading of that paper. There is one point with reference to the Egyptians where they could stand much mutilation because they did not eat meat. During the war bacon was used in great abundance, and if the Egyptians could stand cutting up more than our boys, I would like to see the operation. I never heard mentioned once that our troops were hurt by getting bacon to eat. From my own experience, I have eaten raw pork with no lean in it, with no bad results. Dr. Coleridge taught that "appetite was the best of sauce." I would like to hear a discussion on this.

J. G. Kingsbury. I wish to ask the lady if she can not be mistaken in one statement made. My friend, Mr. Johnson, lives almost on Jersey milk and he seemed much troubled when you announced the poisonous condition of the milk. He attributes his late attack of the "grip" to this. [Great laughter.] I have a $\frac{1}{4}$ Jersey and am getting somewhat uneasy myself. [Renewed laughter.]

E. L. Furnass. My Jersey cow invariably got sick sucking other mothers. I attributed it first to silage. We made an investigation and kept it from the cows and still they got sick, and last winter inquiry was made in the papers as to what was the cause of cows being affected with the scours. I concluded it was rich milk they drank. The Jersey milk is too rich for young infants. Dr. William Hall, of the *Health Journal*, New York, said the time would come when it would be considered risky to drink it. Now if that is a fact we have the matter of health largely under our control. Sickness is generally in the form of dyspepsia, and my friend here asks whether it is a national fact. We are a nation of invalids. Bright's disease, rheumatism and neuralgia. We are a nation of sick people. Go where you will, it is a common remark—sick. If Dr. Hall was near true it indicates that we are largely under one control. I believe it is a fact, as Dr. Page said. He makes the claim, in the *Popular Science Monthly* of 1880, in the November number, that colds were unnecessary; he thinks by experiment on himself there is no need to have colds, but goes on to detail his

experiment and practice, which are very peculiar and ridiculous. He talks of lying down on his bed with window raised, with no covering on him but his clothing and took no cold; again he says this was caused by abstinence from food. Dr. Page, to more fully demonstrate this, again resumed his full diet and exposed himself and invariably took cold.

J. B. Conner. If dyspepsia prolongs life, we will find men seeking how to get dyspepsia. (Laughter.) The announcement of Dr. Page, of Boston, is accounted for from a practical occurrence; as to the use of Jersey milk, tuberculosis has existed in a large degree in the Jersey cattle of that city. The reason is readily understood, for the milk is affected by that disease.

Mrs. Merideth. Dairy breeds do not seem to have a strong constitution and are more subject to tuberculosis. This is why I say some speak of Jersey milk not being fit for food.

Mrs. Swain. Some of those cattle have been butchered and not a sound liver found in the herd.

Peter Rabb. We use Jersey cream every day, with no bad results. I don't believe the milk is unhealthy.

Mr. ———. I would like to hear Dr. Brown make a few remarks on this question, for I think he can give us some practical ideas.

Dr. R. T. Brown. I am reminded of Mark Twain when a young man, who was going to give a lecture, said. "What shall I lecture about?" "Oh, any subject; Greek history, if you like." "But I don't know anything about it." "So much the better; the people won't be in the way." [Laughter.] There is an immense amount of assumed knowledge of hygienic instruction in regard to diet. We have had a good paper and on this subject there are many rocks on which philosophers have stranded. In all seasons of the year and occupations the diet must vary with the condition of health, occupation, temperature of the air and body. I know there are hereditary predispositions of certain forms of nature. Constitution, occupation and habit of living controls this matter to a large extent. I know that the early settlers of the back woods in hot weather

ate bacon and had good appetites; when I had no appetite, I killed a squirrel; I got along well and so did they, and did not get dyspepsia or get sick. There are certain things we should not eat; we should select pure food and cook it well. The fruits are all more digestible the less you cook them.

Question. What ought not to be eaten?

Dr. R. T. Brown. There are large bills of fare that should not be eaten. You should not eat anything poison [laughter], and some things not poisonous containing adulteration, but I have not time to elaborate on that. I am going to say, however, that some vegetables seem almost or wholly indigestible. The cabbage, for instance, the more you cook it the less digestible it is. It is hard to cook it into a pulp, but when it is, it is indigestible entirely. About the best rule I could give in this particular would be to eat carefully, take exercise, don't dissipate in any way, rest when tired, eat when hungry and quit when you get done. [Laughter.] I have lived that way for over eighty years and enjoyed good health, and have missed but one day in twenty-five years in having good health, but would not tell you to live that way, for your constitution might demand more rest than mine, or more exercise and less rest. You must live according to your constitution and habits of life you are under. You must not know in eating that you have a stomach and must not watch your stomach to know what becomes of the dinner. [Great laughter.] Owing to my advanced years and feebleness I shall be unable to preside at your meeting to-night. With your indulgence I will give this duty over to Prof. Latta, who will preside in my absence.

Adjourned to 7:30 P. M.

EVENING SESSION.

In the absence of Dr. Brown, Prof. Latta called the Institute to order at the appointed hour.

Sylvester Johnson, of Irvington, presented an address on

*SMALL FRUITS AND HOW TO HAVE THEM.

J. W. Apple. In cultivating I throw the dirt on the roots of the cane each year, and by so doing seem to get too much of a ridge. How do you avoid it?

Mr. Johnson. It is difficult. That is the worst thing I have to contend with. I have managed to cultivate with cultivators and have not thrown up to the roots, but if the roots are exposed grass will get in the hill. I have thought of getting a plow and throw to them and then take a small harrow and drag back again.

J. N. Latta, Haw Patch. Friend Johnson is to be complimented for reading a paper to such a small audience as this; it requires courage to do so. If he will allow me, I will dispute with him on some varieties. In the first place I would emphasize the fact, in buying plants be sure to buy early. This, I think, is essential. All plants I expect to use this spring are already heeled in. Last spring the plants Prof. Troop sent me from the experimental station were fine, and those I received the year before all died, not because they were improperly packed, but were not received at the proper time. Five hundred plants, I would think, would be enough for any family. I have planted strawberry plants by taking a spade, removing the plant and earth in the place, which does not so much retard the growth. For that amount I would transplant in the spring. Of course it is some trouble, but we can not have anything without some trouble. Those I planted last year were not hurt at all and the fruit was large and abundant. I would change his variety of strawberries. I would not plant Crescent but would plant Haveland and Bubach No. 5. The Haveland produces more fruit with me, larger than the Crescent, and not so sour. As for red raspberry, I would use Cuthbert. The Marlborough winter-kills with me and is a terrible pest to eradicate, harder than weeds because

* Mr. Johnson's paper was not furnished in time for publication.

it grows faster. I do not cultivate raspberries at all, but mulch with manure and never plow. I dig deep and, after the first year, I mulch with clover straw, mulch so deep that the seed don't grow. The same way with my roses. I have had seed come up by mulching late in the spring with manure.

Dr. Collins. Is manure necessary for Cuthberts?

Mr. Latta. I never had ground too rich.

Dr. Collins. Mine go too much to vine.

Mr. Latta. One might grow more berries than I do, but I am pleased with them. For strawberries I make the ground as rich as I can. I am very much pleased with the Brighton grape; it grows almost as vigorous as the Concord; the berry delicious; great bearer and does not rot.

S. Johnson. I have trouble with the rot among my grapes of that variety. As regards raspberries, they are good, as many as I have mentioned. If I were to read a paper before a strictly horticultural meeting, I would mention more varieties, but these farmers do not want but a few varieties. Another thing of which I wish to speak; there is much depending on locality in raising anything. While I was in Wayne County for eight years, I never had a cluster of grapes that were entirely perfect, but rotted badly. Not willing to give up, I brought some to this county, and never have failed to have fine clusters of grapes. I mention this to show difference in locality, and so the strawberry may do well here and not in other localities.

Prof. Troop, Purdue University. In speaking of varieties of raspberries especially, it is well understood with those who make a business of different varieties, have preferences of soil, location, etc. It is difficult to give a list of raspberries which would do well in all localities. For instance, because the Marlborough does well with Mr. Johnson, is no reason that it will do well on our soil; it requires a heavy soil. Speaking of strawberries for the farm, the Crescent is a good berry for table use; but, among others, I would add Warfield, Buboia, Logan and Haveland, and put in place of Crescent for table use. While the Crescent is a market berry, Jesse is too tender, the blossom

stems are too long, and the blossoms will catch the frost. Last spring it was the only one out of seventy varieties that was killed; it is early to blossom. We also have the Sharpless, which is medium. The Itasca is too small.

Hon. J. A. Mount, Shannondale. As this is a farmers' institute, we want to bring out small fruit culture in its various phases. With regard to the cultivation of the blackberry, Mr. Johnson's remarks are excellent. The Snyder and Taylor are the leading varieties; raspberries, Souhegan and Gregg; strawberries, the Crescent, from all of which I have had good results. In the cultivation of the blackberry, I put rows eight feet apart; have straw at each end of the row. In the spring I do not take the old canes out but break them down and mulch well with this straw at the end of the row. I cultivate raspberries the same way. As to results, I realize on from one-half to three-fourths of an acre not less than fifty to one hundred bushels a year. You can raise more blackberries and raspberries that way than otherwise; that is all the cultivation I give. I planted five hundred of Crescent and Wilson strawberries and gathered two hundred quarts. My small fruit pays me more than anything else and don't take any more time than to raise a crop of potatoes. If we exercise a little judgment it don't take much work. It is success in business to grasp the situation and make the most of it. If you don't raise small fruit you are sad in your life. I make a failure sometimes raising potatoes, but I still manage to raise lots of fruit. We should go to some reliable man and select good varieties, and stay with them. Go to your home nurseries and select the best varieties, and give good cultivation.

Mrs. J. A. Mount, of Shannondale, submitted the following paper on

HOW TO BETTER THE INTELLECTUAL AND SOCIAL CONDITION OF FARMERS' FAMILIES.

The subject before us was not chosen because of the ease with which it might be dwelt upon upon, but from the apparent need of discussion in this direction. Improvement seems to be the watchword of the nineteenth century, and shall we as farmers fail to catch the inspiration? New plans are being discussed; new and

improved methods are being continually introduced and applied for the promotion and advancement of success in our business. We note with pleasure the growing disposition in farmers to seek for more knowledge and to make real advancement in financial matters. But while this is the case we assume it as true that the progress of intellectual and social training is greatly deficient in the country. Upon every age and pursuit have been heaped numerous criticisms of both a just and unjust character. It is by means of the objection, however, that our mistakes are discovered and we are led to correct many things which are obstacles in the way of advancement. That criticism which is merely able to point out faults and discover blemishes, without offering some means of improvement, is merely a disturber, and would render better service by keeping silent.

We do not claim to have perfect knowledge of the question before us, either as to the lack or how to supply it, but shall endeavor to call attention to some of the prevailing errors of the country, and present our views as to the antidote for the evil. The terms of our subject bear a relative significance, the one to the other. As the educational interests of the country are improved, the facilities for elevating the social standard are increased. Notwithstanding the fact that the country has ever been rhythmized by poets and lauded by authors as the abode of peaceful leisure and unalloyed happiness, there is a decidedly prosy side to country life which the actual resident will not fail to discover. As for leisure, if our happiness depended upon that, we should seldom be happy. Although we are ever seeking it, we are destined to realize pleasure in the pursuit rather than the possession; for while it is oft in view, just as we are ready to grasp it, nymph-like it slips into the shadow of some oft-recurring duty, and *thus it is* we discover that our lives contain more of prose than poetry.

How comforting and inspiring, in this connection, come to us the words of one of this city's ablest clergymen: "Labor is the air-line road to happiness, as well as the direct path to character and usefulness."

Even as we believe the ease and leisure of the farm are overdrawn, so we think the independence of the farmer is exaggerated. He may be the most independent creature, since it is possible for him to exist alone, after the Robinson Crusoe style, but in the effulgent rays of this enlightened century, when science and labor go hand in hand, when great minds boldly confront the stupendous questions of the day and solve problems which benefit all, his independence falls into line with that of his brothers, in their respective vocations. Evidently the country and the city are dependent upon each other, and as the world strides on in progress they become more and more so. But I may be asked what all this has to do with how to better our condition intellectually and socially? Just this: we hope to disabuse the public mind in regard to the prevailing idea, that the farmer and his family enjoy a calm and placid life. We desire to show that life on the farm is not made up of hours spent in peaceful quiet and leisure, but are filled with labor. Also to inspire the mind of the farmer with the idea that we need to do something more than seize the plow, if we would greatly independent live. Self culture is a duty belonging to every person, enjoined by family interests, by public claim, and by God himself. This duty includes the culture of body, mind and soul. Moral philosophy plainly teaches that no man is at liberty to neglect his

own discipline and culture. Not even are the claims of business paramount in importance to this. It is our highest duty to honor the Creator of our being and meet his divine approval by improving and using the talents He has bestowed upon us. The initiatory step toward supplying a want is the realization of its necessity. There are few obstacles in the way of the farmer's progress which may not be overcome by will power. On many farms the daily toils in the treadmill of life are performed with little to break the monotony—some even denying themselves the change that church-going would afford, socially, intellectually and morally. The intellect can not expand without an incentive, nor will the social nature develop without an opportunity. Farmers who do not read and keep themselves conversant with the age are not, as a rule, acute observers of human nature, and as a consequence prove good subjects for the snares laid for them by the dishonest and unprincipled. We can scarcely glance over the weekly or daily news-journal without seeing an account of some one being swindled by sharpers. And it is almost invariably, to use the terms of the journalist, an honest or an ignorant farmer who has been the victim. To be called honest is ever creditable, and should be sought after, but to be justly called ignorant is no honor to any one, especially in this age of books and information, when all necessary literature may be obtained at small cost. Let homes in the country be supplied with a good number of useful books, leading newspapers and standard magazines of real information, and it will not only possess a reasonable safeguard against the wrongs perpetrated by intrusive and vicious idlers, but will be a well-spring of joy and knowledge whose fountains will never become dry, and whose streams flow on through time.

"A reading people will soon become a thinking people, and a thinking people must soon become a great people." Let us place good literature before our children, and teach them to love it by reading it ourselves. And let it not be all of a sedate and studious character, but let us encourage the fun-loving nature of boys and girls by providing a store of puns and stories, a prolific source of merriment for the children, and many times will provoke more sedate natures into a hearty laugh. A wise writer has said: "Every book you furnish your child, and which it reads with reflection, is like the cast of a weaver's shuttle, adding another thread to the indestructible web of existence." Too many homes are places where manual labor, and the rewards of it, are considered the one important object in life, repeatedly burying their profits in more acres. Parents who rear a family with this end in view will be the means of dwarfing the intellect and impairing the souls of their children, who grow up in the midst of one ceaseless round of toil, with little diversion from labor, and few home attractions and conveniences. The question has become as familiar as household words. "how shall we attract our boys to the farm?" Certainly not by the method above mentioned. We should study carefully the inclination of our children's minds, and educate them as thoroughly as we are able, for whatever vocation they choose, education will only fit them the more perfectly to fill.

Let us strive to make farm life attractive by a neat and orderly manner of farming; not sparing in reasonable adornments and beautifying features, which are

the source of so much enjoyment in other homes. Why should not the farmer, who owns, unincumbered, a reasonable amount of land, consider himself able to surround himself and family with luxury and elegance equal to the merchant, who owns his building and its contents? Who is more deserving of a house built according to her taste, finished and furnished with every convenient and tasteful arrangement desirable, than the successful farmer's wife? Such environments go much farther toward brightening the lives of wife and daughter than men usually realize, and are truly a means of culture in the family. It is one of the greatest and most useful studies of life, to make a true home. A study to which parents should give early and close attention, which, if rightly improved, will give joy and satisfaction in the family circle, and will follow with a sweet odor each diverging path when the circle is broken. It will be like the poet's vase,

"You may break, you may ruin
The vase if you will,
But the scent of the roses
Will cling to it still."

Education consists, not merely in that knowledge obtained from an ordinary, or even a higher course of study. The formation of habits, the restraining of passions, the cultivation of tastes, and the moulding of characters are all considerations. It is said that habit is our best friend or our worst enemy. It can exalt one to the highest pinnacle of virtue, honor and happiness, or sink one to the lowest depths of vice, shame and misery. The highest intellectual and social development can only be attained by the formation of correct habits in children. This being true, it is very apparent that the mother is the principal teacher. It has been well said that "the mother makes the home, the home moulds society, is the hope of the Church, and shapes the destiny of nations." In view of the responsibilities belonging to them, is there not an earnest call for educated mothers?

Mothers educated in gentleness and modesty, who will not sacrifice home comfort to the dictates of fashion; mothers of cultivated intelligence who, while ever studying the needs of the family, will strive to so feed the mind of each one that they may become useful members of society; mothers of unswerving religious principles, who will strive to inculcate in the youthful minds that truth and knowledge which outshine all others, and without which the brightest mind will fail of its true end.

We know that mothers will often bring the plea that they have no time to devote to reading with the children. Our own experience tells us that the duties which crowd the life of a wife and mother on the farm are legion, and we would not add to her burden. But stop amid your busy cares, dear mother, and ponder the question. All too soon your little fledgelings will have become full grown birds, and be leaving the home nest. This is your golden opportunity. Will you let it pass unimproved, or will you not rather seek to lighten your duties, either by curtailing them, or procuring help to share them, that you may devote more time to the cultivation of the tender plants entrusted to your care? The amenities of home are everything in laying the intellectual and social foundation firm and true. The influence exerted by parents over their children is without limit, hence a

careful example is necessary. Many a mother who has been taught lessons of propriety, good taste and politeness, through the monotony of life, with only her household about her, has gradually dropped one after another of those delicate touches of character which go so far toward making a beautiful and cultured life. Many a father who would not be guilty of rudeness to others, will sit down to his own table and be entirely oblivious to all rules of common politeness and decorum, which are as essential to the refining culture of his children as the food of which they partake is to the sustenance of their bodies. "The teaching of home should be, in this particular age, to inculcate plain living and high thinking, instead of high living and no thinking."

The boys and girls of the country enjoy meager school advantages, compared with those in the city, and can not be expected to compete with them in scholarship without good home training. This is another direction in which, if farmers were wide awake and active as they should be, we might realize improvement. The present manner of obtaining an education in the country is very discouraging. Let us strive to secure every lawful advantage we can for the improvement of our schools.

Another training very necessary for our boys is that which will enable them to transact public business, and fit them for filling public positions. The young man who has received a common school education may be reasonably qualified for ordinary business transactions, but if he has learned nothing of parliamentary rules, when he attends public meetings must often remain a silent listener, even at the expense of his just rights.

As the best and most available means to the country of supplying this lack, we recommend a good literary society in every community. This is not a new suggestion. We are aware that many literary societies are held, but they are not, as a rule, conducted on that high plane of intelligence which is necessary to make them conducive to the highest good of the community. They should be organized with care, and governed by rules as stringent as any public body. It being a place where parliamentary rules are to be taught, the body must not transcend its dignity, but must maintain a thorough respect for the rules by which it proposes to be governed. Such a training, if improved, would prepare the youth of the land for acquitting themselves as men in all places where such knowledge is required.

One of the prime factors in the solution of this question, How to better our condition intellectually and socially, may be found in the organization of literary or reading circles, which meeting in the farm homes may prove truly beneficial in supplying a great lack. Such organizations, conducted carefully and systematically, would afford an intellectual and social training, the trend of which would be a higher development of manhood and womanhood.

If the objection of time should be urged in this connection, we suggest the trial of King Alfred's allotment of time, which was as follows: Eight hours for work, eight hours for sleep, and eight for mental and social culture.

The social nature of mankind is not acquired, but, like the mental faculties, is divinely given. It is a characteristic of every nation.

We leave solitude to the miser and the melancholy hermit:

“For howsoever some may rave,
It seems a sanctuary and proves a grave;
A sepulcher in which the living lie,
Where all good qualities grow sick and die.”

If man separates himself from his kind, he degenerates into a selfish, miserly, and mean creature.

We believe these God-given qualities were intended for our pleasure and profitable enjoyment, to the end that the All-Wise Giver may be glorified. To the true elevation of society, nothing is more potent than a high state of morals. As the moral nature of a person is improved, the finer qualities of his being are brought to the front, and his influence will be elevating as far as it extends. To the purity and virtue of rural life, may the highest endeavors be given, and let us strive to use all diligence in the improvement of the qualifications here mentioned, the fruitage of which will not only elevate and dignify our homes, and qualify us for all the duties of life, but will better prepare our immortal souls for the enjoyment of Him who gave them, and who shall one day gather them to himself.

DISCUSSION.

Hon. Milton Trusler, Bently. We are all aware that our sons and daughters, if they find higher schools, must go to the city. I am acquainted in some localities, where there are higher schools for the farmers, that is where the old, middle aged and young have an opportunity of receiving some kind of education. It is a school where fathers, as well as sons and daughters may be taught to love their vocation. Brothers will love their sisters more by so cultivating and reaching out beyond the home circle and doing good everywhere, thus fulfilling the great commandment, “Thou shalt love thy neighbor as thyself.” Then it occurs, Who is our neighbor? By reading the parable of the man who fell among thieves we would say that the Samaritan was the neighbor, but he is to be found everywhere on this mundane sphere where man lives. The Laplander in the ice-bound regions of the north should be educated. Educate the boys and girls as early as possible, giving a peculiar kind of training they can not get in common schools. Educate the heart, head and hand—the head to know what is good and what is bad; the heart to leave all bad and take the good, and the hand to industry. We have many of these kind of schools in Indiana, that are doing a grander work than you are aware of. The

day is not far distant in the future when the boys in the country will understand their business as well as the professional man does. You train the boy to follow the profession of law, and train him well, and he still studies to keep up his profession, and the same may be said of the physician, and why not the farmer, when there is more depending on him than all the others, we virtually neglect our education to a great extent. It is a great crime of the farmers of to-day. We should have some kind of school in each township, wherein botany, physiology, chemistry and philosophy may be taught. It is the farmers who pay the principal part of the taxes for the carrying on of this government, and are entitled to such schools. Many of us can not afford to send our children to agricultural colleges. I wish we could; but it is impossible. I wonder that the farmers are educated up to the point they are. One of the most effectual means of cultivating ourselves is reading societies, keeping up a good social feeling in that way.

President J. H. Smart, Purdue University. I wish to offer a few remarks in relation to books which children read. Many of us are interested in men drinking, and the temptation is placed before our young people. It is a tender subject for me to speak of, for I have four or five hundred children under my care. Bad literature is doing ten times more harm among young people than liquor, however much we may estimate that. How to get rid of it—you will never do it by prohibition. In this case we must educate and instruct to a higher standard; you must have something to read that is good, keeping a supply of good literature. If your son wants a good book, after deciding, interest yourself in a library and have a good one and make him the owner of it; it will infuse in him ten times more interest than to borrow. If I had ten children I would want ten book cases in the house and let each one have their own. Bad literature is far more of an evil than you imagine. If you could see how bad it is in the city I am sure you would feel the necessity of using every effort to place the best of literature before our children. I think six months school in the country is all you want, but in the city ten months, we can't

keep the children out of mischief. Six months will make a better life, closely applied, than ten months more or less idled. A six months school for a boy well managed, is better than twelve months greatly idled.

J. N. Latta, of Haw Patch. I am willing for Indianapolis or any other city to have twelve months school if they pay for it, but I believe six months in the country, where they can learn botany and philosophy, is long enough. There is not a county in the State that has better schools than Lagrange County. We have good teachers there because we will have them; if there is not public money we hire them anyway; this high colored literature has little effect on us in the country, while it may in the city, where the children are started to school so young; but we have trouble with the saloon; they are a curse to the State of Indiana. [Cheers.]

Prof. W. C. Latta. The boy would like to be *one* of a small affair and hold a partnership in larger affairs. If we find what the boy has a preference for, it would be best to let him develop and call out his faculties in that direction.

J. N. Latta. I don't think that will altogether do; we train for the next generation.

Prof. F. M. Webster, of Purdue University, not having prepared a paper on

INJURIOUS INSECTS AND HOW TO DESTROY THEM,

In response, made the following remarks on the subject:

To tell you all about injurious insects and methods of destroying them is like giving a history of the world in ten minutes. I am not altogether sure that I know, myself, what constitutes injurious insects, and I don't believe you do. It is something that varies, I might say, every day, certainly every year, and varies with every locality from almost every geological variation in the flora of the country, because of corresponding difference in the insect fauna. I will give one illustration, that is, the chinch bug, known all over the United States as an injurious insect. It does not do damage outside

of one-half dozen States. Those who live in Southern Indiana will tell you that it is an injurious insect; here is Mr. Latta, who will tell you just the opposite. I do not think they have ever been destructive in Northern Indiana. They start from the southeastern counties, extending nearly parallel to the Illinois line, about Terre Haute, extending northward, gradually disappearing until they disappear entirely. I can not explain or give any reason for it. It is not the climate, for they are destructive in Minnesota, where the climate is severe, and west of Lake Michigan, in Illinois, they have been destructive for twenty-five or thirty years. Now, you see, what may be an injurious insect in one locality, may not be in another. How often, speaking of these things as though something of a dispensation of providence, you seem to imagine these things exist and always have and always will exist, while the two are entirely different. The injurious insects of America are just precisely what the farmer and merchant have made them. We haven't an injurious insect but what the agriculturist, horticulturist and merchant have imported from foreign countries, and many have been released here and are working their depredations. We have imported the cabbage worm and currant worm. The Hessian fly is attributed, as you know, to Europe, and probably came to this country, as we are taught, because its first appearance was in the vicinity of the camp of the Hessian troops on Long Island, and known to occur in foreign countries before that time. I give this as an illustration. We brought them ourselves. The cabbage worm was introduced in Montreal with a cargo of cabbages. We have a great number of destructive insects which are difficult, and, I fear, impossible to stamp out. You have the Colorado potato beetle; in 1864 it was found in the Rocky Mountains. It was not a destructive insect, and did not do anything until the settler, by introducing a plant very like its natural food, placed a stepping-stone to cross over. In their way was the Pacific Railroad, running through their country. The Indian would get on the platform of the cars, ride a short distance and jump off; the potato beetle did the same, but did not get off like the Indian. These

western railways have been instrumental in conveying this insect to different parts of the country. Again, there is nothing, not a single plant in this country but what is capable of reproducing extreme abundance. Just think of the great oaks which might be produced from the acorns, and the hickory trees from the nuts. Surely, if there were not some restriction, the increase of these things would be so great there would not be room left for us. Still, we must not exterminate; there must be some source to increase their standing among other plants; so we must not cut down to the minimum by killing off; so there is a restriction put on it; insects increase to keep it down. Whenever you plant 100,000 acres of corn or wheat, when this plant is getting support and going beyond the limit, nature has provided these insects to restrict and hold in check; that is where the farmer gets his insects. We have hundreds of insects that have never done any damage in this country. They are increasing here, but it is in a way in which they may be controlled. Here is one springing up as if by magic, but no one has known it to do damage. Here is one existing from Canada to Texas and from Kansas to the Pacific coast, but has never done damage because it lived in swamps and subsisted on weeds. In the prairies there are many sloughs; when drained the land is quite valuable. These swamps are being drained out and you are crowding these insects to the wall. After draining these swamps, when you plant them in corn you kill the cypress, and the insects are forced to subsist on the corn. You can not prevent them coming in the swamp, but it is not known that they will destroy anything but corn which you put on those places. However, we can dodge them, yet there is not an injurious insect in this country you can exterminate. The farmers of Indiana and Illinois have made the corn worm here just what it is. I have hunted day after day and could not find them, but now you can find them where there has been no rotation of crops. They grow on the thistle, first, and then go to the corn. They seemed to find out that they could breed in the corn and live on the pollen, as well as the flower of the thistle; those little grubs hatch and get on the fibrous roots,

eat them up, get to a larger one, tunnel it, following every root right up to the plant, and do the same way with the brace roots thrown out, and oftentimes cut off, so the stalk will double over and every breeze will throw them down. In July it comes up and feeds on the pollen and does more damage to the farmers of Indiana than any we have, and it is the most easily managed. We can sweep it out of existence in a very short time. Now, a simple rotation for one year and you sweep them out of existence. They can not feed on the roots of small grain. It seems to have been that the farmers had to have something to cause them to rotate crops, so I will leave it to you whether it is a blessing or not. It is called the corn-root worm, and is closely allied to the cucumber beetle. There is another destructive insect to corn in some portions of the country, which we call the twelve spot beetle; it has black spots instead of stripes. Instead of attacking the root it goes right in the stem of the plant below the ground, and when it bores in it kills the plant. I find that destroying corn to some extent, but not much in the northern and central portions of Indiana, but, perhaps, doing some damage in southern Indiana, and worse as we go south.

Question. What is the remedy for the white grub worm?

Prof. Webster. I am free to say that no practical remedy has been found for the white grub. A great deal can be done by rotation of crop. I think it would hold them in check as much as anything we can do. They will breed in grass land where it is allowed to remain too long without plowing. They may not do any damage from the sod this year because of last year, but in about three years you might, perhaps, look for them again.

Mr. Bowles. Last summer I noticed my hogs tearing up the pasture. I went to town and got some rings, expecting to ring them. While watching them I noticed them picking up worms. I left the rings in the chest and have had better corn on fields where hogs have run.

Prof. Webster. If we have anything that will destroy the grub let us have it. We want to get rid of it. Hogs will clear

out all the new ground of this pest. There is another animal as industrious as the hog in this respect, which is the skunk.

Mr. Trusler. I have gathered worms and taken to the hogs and never had but one hog on the place that would eat worms.

Prof. W. C. Latta. That is the observation of some others.

J. N. Latta. We have got our hogs bred up too fine; we had better go back to the scrub. [Laughter.]

Dr. Collins. Do grub worms work just under the soil or is it a cut worm?

Prof. Webster. There is one very much like the grub, and it is difficult to distinguish one from the other.

J. N. Latta. I know a remedy that will effectually destroy the grub. If you take a ten acre field and place a family of the French perfume animal, or skunk, in it they will eradicate them, but whether the remedy is worse than the grub is a question to consider.

Adjourned to 9:30 A. M.

FRIDAY MORNING SESSION, MARCH 28, 1890.

The Institute was called to order promptly at 9:30 A. M., by Supt. W. C. Latta. Rev. Dr. Jenckes, of St. Paul Church, offered the following

PRAYER:

We desire to thank Thee for the great protection which Thou hast given us during the past night, yet there are others suffering from a great calamity, yet Thou hast taken great care of us and have blessed us in many ways, for which we do indeed thank Thee for these mercies. Thou hast reposed in our hands an important trust, as we represent the peace and principle of the prosperity and success of this country—the foundation and corner stone of it. O, help us to realize the weight and responsibility; help us to digest the matter coming into our hands to His honor and glory, and advance the interest of agriculture in this great commonwealth. We bless Thy name

for the encouragement Thou art continually giving to us in the fruits of the earth lavished upon us with Thy laboring hand. Help us to be guided and led by Thy unerring spirit, and let all be done to the glory of Thy name, and realize Thy presence directing us in all we do, enabling us to carry on the great work begun to the honor of Thy holy name, and "Let the words of my mouth and the meditation of my heart be acceptable in thy sight, O Lord, my strength and my Redeemer."

Superintendent Latta selected E. L. Furnass, Alex. Heron and D. L. Thomas to wait on Governor Hovey and invite him to address the Institute.

Hon. Milton Trusler, of Bently, Ind., presented the following address:

WHAT CAN CO-OPERATIVE EFFORTS DO FOR THE FARMER?

What is coöperation? Webster defines the word to mean, art of coöperating; concurrent effort, or labor. It is joint operation. We learn from history that in all ages, material progress has been made in the interest of mankind, by and through concurrent effort. Without coöperation no great work can be accomplished. Upon this principle the union of the States was formed, and by coöperative effort, it has grown and prospered until it has become the grandest nation the world has ever known. The principles of coöperation were deeply rooted in the minds of our Pilgrim fathers, hence we have to-day the highest type of civilization known to man. The American citizen can boast of a country that stands at the head of the column of the nations of the earth—not only in civilization, but knowledge, virtue, wealth and power. No man has a patent on coöperation; neither is it a new invention. It is old as creation itself. God, in the beginning, so managed his handiwork that all nature must coöperate to bring about its wonderful and mysterious blessings. If the sun, the rain and heaven's dews did not coöperate, the earth would be a barren desert, and both man and beast would cease to exist. But by coöperation the earth yields its abundance to the cultivator, thereby enabling him to clothe and feed the world. Coöperation and education go hand in hand, battling against superstition and ignorance, thus penetrating the clouds of mental darkness, letting in the rays of intelligence to bless and lift up humanity. Were it not for coöperative effort the cause of education would languish; Christianity would be paralyzed; the constitutional rights of the people would be unprovided for and all efforts to develop a higher manhood, a grander and nobler womanhood among ourselves would prove a failure. Successful results are secured only by concert of action. The rapid development and wonderful growth of our country, its vast resources, its diversified interests, with a population of 60,000,000 of people, is the result of coöperation. Men engaged in business have caught the

idea, and hence, applied the principles of coöperation in all lines of trade and commerce. So that individual success in great undertakings is abortive. The intelligent farmer must look with interest, if not alarm, at the rapid progress made by others in wealth, influence and power, by concert of action, while he has remained isolated and alone, each fighting the great battles of life for himself. There is a power in united effort, and since other classes are thoroughly organized to take care of their particular interests by coöperating together, is it not unwise in the great producing class to suppose that they can keep pace with the times single-handed and alone? It seems to me to be the height of folly for the American farmer to ignore the principles of unity of action, no matter how numerous they are, and expect prosperity from individual effort alone. Without coöperation among the farmers the race in life is unequal—it is unavailing. Without it we may, as a class, toil on, but measurably without hope. Prosperity no longer cheers the weary tiller of the soil as in days gone by. Not that his land fails to respond in yielding its wealth to the intelligent cultivator, but from some other cause. Is it not because we do not keep pace with the age in which we live? Conditions have changed within the last two decades. We must fall into line and adopt the plans and methods of other classes that are successful. Education, coöperation, concert of action, is what the farmer needs. With this he would be the equal if not the peer of any other class. With this, the farm would draw rather than drive from, as is the tendency at the present time. One of the great problems for the American farmer to solve is, "Shall we remain free men and free women, or will we suffer ourselves to become abject slaves?" This is a matter that we have entire control of. We can remain isolated and alone in the future, as we have to a great extent in the past, fit subjects to be preyed upon by organized forces, or we can organize, coöperate and take care of ourselves by demanding that which is right and proper, and be satisfied with nothing less. But so long as the farmer throws himself back on his independence, in an isolated condition, his cause is in peril in this day of combines and trusts, which are sapping the very foundation of our legitimate calling. But I have an abiding faith that in God's own good time a conviction will be brought to the heart of every American citizen that concert of action, coöperative effort, is their only salvation from financial wreck and ruin. The light already begins to shine through those dark and lowering clouds that have so long been hanging over our agricultural horizon. Coöperative effort on the part of the farmers has been crowned with success in securing the inter-state commerce bill, the oleomargarine bill, the appropriation of \$15,000 for agricultural experimental station, the commissioner of agriculture, a cabinet officer, the reduction of postage from sixteen to eight cents on bulbs, plants and seeds, and many others that might be mentioned.

The history of all countries in all ages, teaches us that society is fragmentary, and for self protection the people have been necessarily compelled to act in concert. Unity of action can not be brought about without some kind of discipline, and discipline can not be enforced without systematic organization. Then should not the farmers have some kind of an organization in which we can drill and discipline our forces? So that we may be able to coöperate successfully in all measures pertaining to our interests and the welfare of humanity. The age in

which we live is an age of progress, an age of steam and electricity; an age of struggle for wealth, position and power; and observation teaches us that the class best organized and best drilled, makes the greatest advancement in all that pertains to their particular interest. We can not expect to measure swords with other classes unless we are armed and equipped for the contest. Organization, coöperation, concert of action, is the watchword of the hour and the dullest man or woman can not fail to see that that class which fails to avail itself of this privilege, is to be left behind and preyed upon by those that do. The American farmer seems almost unwilling to call to his aid this blessing, this power, this giant of strength, in the management of his domestic economy; other classes are not. Idle or negligent, they see and take every advantage of the great power there is in unity of action. Yes, we find them ever ready and willing with counsel and advice, to aid each other when their interests are involved. It can not be want of native talent among the farmers that they are in the background, as it seems to me they are in this nineteenth century, but their isolated condition. What we need is a freer and more frequent intercourse with our fellowmen. So that the experiences and observation of the few may be appropriated and utilized by the majority, thus making us wiser, better and more humane in our dispositions. The leaven is at work which must eventually permeate the entire agricultural community. The Farmers' Institute, the agricultural societies of various kinds are educating and leading the farmers to corporative effort. Realizing as we do that agriculture must be lifted up to the high position it belongs, that our interests must be promoted and our rights protected. Civilization is the outgrowth of coöperation; concurrent effort is the underlying principle of social development. It is the great motive power in education. By coöperation all things for good may be successfully carried forward, and all evil banished. Without coöperation Christianity could not have been spread among the nations of the earth. It is this principle that gives power and strength to church and Sunday-school, and that governments are founded, built up and sustained upon the principles of united effort. Then, farmers, why not use coöperation for all it is worth, intellectually, socially and financially, among ourselves.

The age in which we live is not an age of muscle, but of thought. The time was, with the farmer, when muscle was at a premium. Not so now. Intelligence is the ruling power, and the farmer can not afford to fight against the current of thought; neither can we suffer ourselves to float down the stream, and be dashed against the breakers. God has written his law upon the book of nature and those who read may, and those who will not, will not. Great questions are crowding themselves upon us for solution. We must meet them. The history of the world is that those who think, govern those who toil. We have suffered other men to do our thinking; other men have ruled over us; they have made mistakes, and we have suffered thereby. The farmer has borne the burden in all ages—in all centuries—since there was a nation in existence. He is looked upon as the mud-sill to-day; his business is languishing. Why? Because of ignorance! Because our forces are scattered! Because we do not meet together. Because we do not counsel together. In short, it is because we do not coöperate and work together as one man, for the benefit of all. Coöperation, in its true sense, means emphatically to

act jointly together with one another; in a certain sense it may be regarded as a science, and, if properly understood and properly applied, would have a tendency to cure all trouble between capital and labor. It is evident to every thinking mind that capital, independent of labor, is not remunerative, and that labor, independent of capital, is retarded; hence, no great undertaking can be successfully accomplished without their combination. The farmer represents both capital and labor, and he can not afford to see them antagonized or divorced. Money is capital; merchandise is capital; lands, or any kind of property, may be classed as capital; yet all are the products of labor. Then capital is the ally of labor, and neither can continue to exist and prosper without the other. Let us then encourage and practice coöperation among ourselves, so that we may be able to enjoy all its blessings and lasting benefits.

In conclusion, let me say that coöperative effort, based upon systematic organization, can do much for the farmer. It can make him more intelligent, more sociable, more charitable and more benevolent. It can make us better farmers, and give us pleasanter homes. Teaching us that getting a living is not the whole end of life, but that we have minds to feed, brains to cultivate, as well as stock and fields. That intelligence and refinement are as necessary upon the farm, in the kitchen and parlor, as in the merchant's counting room or the lawyer's office. That friendship, love and truth are not mere idle words; that faith, hope, charity and fidelity should be encouraged and practiced by all. That the world was not made for a favored few, to practice monopoly and oppression, but that all should enjoy its blessings. In a word, by coöperative effort, we may be enabled to discharge the great duties of life in an intelligent and satisfactory manner.

DISCUSSION.

Professor Latta. The question is now open for discussion, and I hope you will make use of time.

E. L. Furnass, Furnassville. If a man is sick, he summons a doctor; he (the doctor) comes, looks at his patient, and says: "You are a sick man; you need medicine; if you don't take it you will grow sicker." The patient realizes the truth of the doctor's statement, and then the question is, "What shall I take?" The doctor says, "Something that will cure you." Now this is the condition some of us are in, but people come to us and say, "Adopt principles; we must adopt business principles," they don't specify what that is, but some way of coöperation. We are recommended to coöperate, but we want to know how and why. It is an appropriate thing to investigate.

Chas. Howland. This is a subject that I think we can well afford to spend some time in discussing. I would be very

much in favor of holding up and protecting the interests of the farmer, but I am not so favorably impressed with these organizations as many seem to be, although I hold myself in readiness to join anything that I believe I could accomplish good in so doing. If you would say to the farmers of Indiana, "Go out in the different counties and townships, and arrange for the State Convention, and select farmer delegates to be sent up, not because they are Grangers, but farmers. When I say farmers, I don't mean men who hang around the corners, but farmers on whom you may depend to feed the nations of the world, men who have an interest, and would arrange for the betterment and advancement of agriculture in the county, State and United States. This class of men, if you appeal to them would come up in convention, and there deliberate on the plan, means and habits that they should advocate.

Hon. J. A. Mount. I want to commend the excellent paper. If we take the subject matter of that paper and reduce it to practice the farms would be improved. There is this trouble, we, as farmers, have become chronic grumblers. We have this complaint in our county. Under a free gravel road law we have 200 miles of road. The people found fault, at first, with the amount of red tape required. Some cost \$1,800 per mile. We thought we would act under coöperative principles, but many farmers would not join in principles of coöperation, and the farmers are compelled to resort to law to make them do what we want to without law. We could not resort to law to make men do their duty, and we built free gravel roads right along by the men who would not do anything. If we want to drain a creek, some men won't do anything and we are compelled to bring out an engineer to make an estimate, which makes an expense. One-half of what we complain is our lack of coöperation. We have men who are drawbacks and clogs to the movements of the people. These Farmers' Institutes will be a benefactor to the people and we will see the importance of coöperation, and every man must have respect for the

rights of the people. Let the subject come before the people and be fully discussed and we may gain many suggestions to guide us in the shape of laws, and thereby benefit the people of the State largely by coöperation. The trouble is, some other one won't do anything as we want—it is one of the great barriers in the way of progress. I hope this paper will be taken home and acted upon, and that these Institutes will be the beginning of a new era in our State; that the farmers will think and act in concert and do a good that has not been done before.

J. N. Latta, Haw Patch. I think this question of coöperation is misunderstood. Will you please remember that it was through coöperation that Christianity and civilization is where it is. With all our pastors, churches, Sunday schools, and our missionaries, will you remember that America to-day, the greatest nation on earth, is made so simply through coöperation, a nation of people who are sovereigns of the nation. We pay our President for the purpose of getting the Executive and Congress to pass laws, and also our Governor, which is simply coöperation. Why then is it wrong for the farmers to join hands the same way; pay a man to act as President of a Farmers' Mission, or as Master of a State Grange; to pay delegates' expense of meeting together from all parts of the State to get council, which is wisdom in my estimation. Talk is cheap, but most assuredly Granges have done some good. I don't believe in coöperation stores, but grand efforts for the advancement of farmers' interests.

Hon. J. B. Conner. My friend, Mr. Howland, it seems, is a bloated agriculturist. He has no conscience of need, and is an awful example before us this morning. But it does seem that where men get to the chin in deep water, they do fly for help, but, while they may, they all fly back to Egypt and the flesh pots. There is no miraculous whales for them, so they are driven into this coöperation. Those men that talk this coöperation are those who feel the need of it, and those who stand off don't feel the need of it, and in some way we are "our brother's keeper."

Mr. Howland. I do not wish to say that I am opposed to co-operation, but all should meet on common principles and take a hand. The plan pursued heretofore was not satisfactory to me as might be.

It was announced that Governor Hovey was present and would address the Institute for a short time. When the Governor made his appearance he was received with vociferous cheering.

THE GOVERNOR'S REMARKS.

Ladies and Gentlemen:

I am glad to address any body that is engaged in such laudable enterprise as you are. I must say that I am somewhat sick, and have been for sometime, with that fashionable disease called the "grip." I, however, would not let pass by the opportunity to make a few remarks on one subject that is of deep interest to every farmer and, indeed, inhabitant of the State; that is in regard to the public highways, both county and State roads. I issued and sent out a circular requesting men to give me data as to condition of roads. As yet but two men have done so; am not prepared to make a statement, and am unable to address you regarding this matter as I should. Rome, when she conquered a country, never regretted their course, but made thoroughfares by which Romans might reach that country in safety. And so men on farms scarcely own farms until they can get to and from them at all seasons of the year. To-day you are losing from two to four months yearly on account of bad roads. How long is this wealthy State going to submit to this kind of embargo when you can wipe it out so easily? You assess property reaching over \$770,000,000. How much is levied on that property to make your roads good in every section of the State? One dollar to the thousand, or one mill to the dollar, would build roads passable the whole year. I would make every saloon in the State pay not less than two hundred dollars, placed in the hands of the commissioners of the State for that purpose. That is my theory, and

I don't call it Democratic or Republican. [Cheers.] You need good roads; they are indispensable to the success and prosperity of the country. A country is not civilized without it. How much have you lost in the last six months by bad roads in the way of carrying your grain to market? Can you make an estimate? I have no doubt you have lost \$50,000; your teams and hands are idle. If you attempt to carry a load to market you fail, and are compelled to carry not more than half a load; pay full hand labor and get one half load to market. This is a very important subject for consideration by the people of our State, and I wish I was able to give you a good lecture on it, but I will have to go. I thank you, ladies and gentlemen, for your kind attention.

C. B. Harris, of Goshen, Ind., presented the following, on—

COMPARATIVE COST AND FEEDING VALUE OF ENSILAGE AND OTHER FODDERS.

Mr. Chairman, Ladies and Gentlemen:

It will no doubt seem queer to you that an agriculturist should be asked to enlighten you old farmers on the subject of feed for your cattle, and you may well ask what is an agriculturist, as, also, what is a farmer? I will tell you. A farmer is a healthy and honest man, who lives on a farm, and, in his own opinion, works awful hard and just makes a living. An agriculturist is a man who owns a farm, lives in town, takes it easy, and has a business to keep the farm going. That's me, and that is why, in the winter of 1886 and 1887, I made up my mind to investigate the merits of ensilage with a view of feeding it to my dairy cows and lessen the expense of running my farm, as the business in town might not hold out. I corresponded with several feeders, both large and small, in New York, Vermont, Massachusetts and New Hampshire, and from the glowing accounts they gave, it became evident to me that what was good for a Jersey down East would be good for a Jersey in Indiana. I went at it, and for the three years last past I have fed it to every animal on my farm, and to-day a more enthusiastic feeder of ensilage than I am can not be found. My experience is principally in feeding it to cattle, both for dairy and for beef. While I am not prepared to say that ensilage will fatten, I do say that for the dairyman it is a bonanza, and the best and cheapest food that has been found. I have experimented with our common field, sorghum and Southern sweet corn. The last named, a smooth-tongued traveling man from New York, who told me that he was a son of the soil, talked me into buying the seed. I am a great respecter of and a believer of every thing a commercial traveler says, and think that class of men are all right generally, but

if another drummer comes along with Southern sweet corn to sell me for ensilage, I shall feel that he is not the most innocent man in the world, and shall say to him, "Get thee behind me, Satan." A Southern man advised me to try sorghum; we found that no good whatever.

Now we use the largest variety of common field corn that we can get, that will mature by the time we are ready to make our silage. To raise our silage we select our best corn ground, heavily manure and thoroughly pulverize it. In planting we drill in with our wheat drill, stop up all the drops except the two outside ones, that leaves the rows thirty inches apart; as soon as it sprouts we commence harrowing with a reversible harrow, and keep at it until the stuff gets six inches high; it is best then to go through the rows and thin out, as what is wanted is a large stalk and a large ear. We then cultivate the same as other corn, but try to work it oftener, as a great deal depends on the working for the size of the crop. When we get ready to make silage we cut the stalks as near the ground as possible; the person cutting laying it down as fast as an amful is gathered, it is then taken by wagon to an ensilage cutter, and unloaded on the apron of the same. We cut stalk, corn and all one-quarter inch, and it is carried to the silo by an elevator. We keep two men in the silo to tramp down the edges; that is very important, as they tramp around they rake to the sides and evenly divide the corn which is in the fodder, and the same time makes the sides solid; if the silage was not raked to the sides the middle of the silo would contain a great deal more corn, as it is heavier than the fodder and remains where it falls. It is not necessary to tramp the middle, as the stuff is so heavy that it settles of its own weight. We have three silos, which we call Nos. 1, 2 and 3. In filling them, we fill No. 1 three-quarters full; then to Nos. 2 and 3, and fill them the same as No. 1. By the time we get No. 3 filled we find that Nos. 1 and 2 have settled, of their own weight, three feet or more; we then refill them all, heaping full, starting in with No. 1, and then take a rest for a week. At the end of that time we find that the ensilage has settled again six feet or more; we then refill them about four feet higher than top of silo, and cover silage with a heavy plank with a few cobble stones on top, and leave it alone to its fate. When we get ready to feed we take off plank, and from the looks of the stuff around edges we think we have lost something by mold; we cart what we suppose is of no use to the barn yard, the hogs and the cattle make a rush for it and eat it all up, so we lose nothing. In thirty days after cutting it is ready to feed, and if we are short of feed we commence feeding as soon as we cut it. It is necessary to feed off the whole top, as the stuff will spoil in forty-eight hours if exposed to the air. When first beginning to feed we give to each cow one-half bushel twice a day; we gradually increase the feed until we get the ration doubled, that is, one bushel of ensilage twice a day. With ensilage we mix a small ration of ground oats, and for the third feed this winter we give about three pounds of clover hay. We prefer and do feed in place of hay good oat straw when we have it. We find that three cows out of forty will scour on a bushel ration of ensilage; to those three we feed only one-half bushel. From fifteen acres we filled our silos, and estimate that we have of settled ensilage nearly sixty tons in each silo. That a silo, the size of ours, holds an immense amount of stuff is shown by the fact that we fed from November 1, 1889, forty

head of cattle and six head of horses out of one silo, and got to the bottom of it January 17, 1890, two months and seventeen days from the time we commenced. That silo was filled off of five acres. We feed it at a temperature of sixty degrees, and the way the cattle go for it and eat it all up is a wonder to behold, and puts you in mind of a gentleman from Africa going for a watermelon. It is said that one cow in one hundred will not eat ensilage; that cow we have not seen yet, neither have we seen the African decline the melon.

From our experience we have arrived at the following conclusions: that ensilage is the best and cheapest food on earth for cattle. That the best corn for ensilage is our common field corn, large variety. That it is best when cut in the glazed condition, as everything that pertains to the corn is put into the silo at that time green, and is retained, and that it will not ferment, as the heat expels all the air from the silo and fresh air can not enter, consequently fermentation does not take place. On the other hand if cut early, before it has reached the glazed condition, it lacks maturity; we get silage with a large amount of acid, and cattle do not do well. That was our experience with the silage we put up in the fall of 1888. Ensilage put up right will last just as long as any canned fruit your mother ever put up.

We consider ensilage the healthiest food used. We have not lost an animal, neither have we had a sick one since we commenced feeding it. When we were feeding dry feed some of our cows were sick all the time. It aids digestion, regulates the bowels, and keeps the animal all right.

The claim of some feeders, that the feeding of ensilage is liable to produce abortion is all bosh, as we have had no trouble from that source, and I do not know of any feeder of ensilage that has any such trouble. We have had no sickness with our horses or hogs since we fed them ensilage, and I attribute it all to the food. We feed our horses one half bushel each day. I feed my cows for the purpose of getting cream, and have experimented with everything I have heard of to make the milk rich, and have found nothing that serves the purpose half so well as common field corn ensilage. We have mostly grade Jersey cows, and we get almost twenty-five per cent of cream from our milk. We were never able to get any where near that with dry food, and it cost us lots more money. We estimate that in the matter of bran alone, we save \$225 a year. If we did not feed ensilage we would have to feed bran or some other costly dry food.

Every feeder of ensilage that I ever talked with tells me that his experience is the same as mine with cream. Every dairyman, making butter, knows that the ensilage fed cows make the best butter; that the butter is in greater demand and brings a much better price than that made from cows fed on any other food. Right in the little city of Goshen we can sell every pound of butter we make for thirty cents per pound, while other butter goes begging at fifteen, eighteen and twenty cents. There is a very pleasant odor arising from ensilage fed cows at the time of milking and not noticed at all afterwards.

Cows fed on ensilage will not drink as much water as those fed on dry food. That probably is a serious objection to the dairyman who peddles milk. To all such I would advise feed ensilage and cross a stream before getting to town.

Our 1889 crop was mostly raised on old corn ground; we put about twelve loads of manure to the acre. I believe that a farmer robs his farm when he sells anything off of it that he can put back on to the land; but if he feeds ensilage it makes manure of a much better quality, and more of it, than he gets from hay, consequently he can sell the hay without robbing the farm, thereby putting dollars into his pocket that he would otherwise have to feed, and not rob the farm at all. If you don't believe it, try it; it's not expensive.

Ensilage can be raised on the same ground year after year, by keeping the ground manured.

Now as to the expense. From the time we commenced preparing ground until we got the ensilage in the silo, the cost was sixty-five cents per ton. In order to make it this cheap we used the latest improved machinery and tools, with the new improved machine called "Hustling," which I recommend to you all. I had eight teams and twenty men, and then could not keep my cutter going.

For a farmer who wishes to feed a few horses, cows and hogs, a small silo can be built; a small cutter can be used at a moderate expense. Tom Evans, another agriculturist of our city, at my suggestion, built a silo, eight feet wide, ten feet long and fifteen feet deep. He filled it with ensilage made from corn taken off of one and a half acres of rich bottom land. He commenced feeding January 1st, 1889, and from that time until May 1st, he fed five colts, two cows, and carried a lot to his livery horses every day. He turned his stock out May 1st, and threw away two large wagon loads of ensilage.

About fifteen tons of ensilage can be raised off of an acre of ground, at the least calculation.

By feeding ensilage churning is made easy, as it can be done in a great deal less time than from cream from cows fed on any other food, and that makes the wives, daughters and hired girls happy.

Now as to silos. Mine are built in the side of my barn; are nine feet wide, fifteen feet long, and eighteen feet deep. I would advise the building of them out doors, putting them in the most convenient place from which to feed. Make them as deep as you possibly can, as the deeper they are the better the silage will pack. Build them strong, put your studding close together, cement the bottom, and line the inside with clear ship-lap; then take coal-tar and rosin, three-quarters of the latter, make a pitch of it, and apply while boiling hot to the sides of the silo; that stops the cracks, saturates the wood, and keeps your ensilage from the air. The secret of the whole business is, that silos must be air tight.

Try ensilage as a food for your cattle, and you will use no other, or not until some enterprising Yankee finds something that is better and cheaper. By feeding ensilage, yourself and hired man will have less hay to pitch and more time to talk to your neighbor as he passes along. Feed ensilage, and your pocket-book will have more in it, and you will worry less about where you are going to get feed for your cattle. When you go to town, you will stay longer, and the first thing you know you will find that the farm does pay, and that you are moderately well off, and you will attribute it all to the feeding of ensilage.

DISCUSSION.

John Clore. Mr. Furnass, have you had experience in feeding ensilage to beef cattle?

Mr. Furnass. No, sir; nothing except my cows for dairy purposes; it will make fat dairy cows.

Mr. Clore. What amount would be best for putting on fat?

Mr. Furnass. I do not certainly know. Professor Henry tells of where they have been fattened on ensilage, and could not be fattened on corn and hay.

Prof. W. C. Latta. What success is there in feeding it to young stock?

Mr. Furnass. I have not fed it to young stock. We have a silo thirty feet square and twenty-five feet deep, with two chambers, which holds a vast amount of silage.

J. G. Kingsbury. How do you get the ensilage out?

Mr. Furnass. We take it out from the lower door, and that is on a level with the cows; cutting down to the lower door gives us a good chance to feed with little or no trouble.

C. B. Harris, Goshen. My experience teaches me that he must feed off the whole top. My silos are in the side of the barn, with doors running from the top to the bottom, having boards across the door. I take out a board occasionally, keeping my door even with the top of the ensilage. These doors are filled in with sawdust. Ensilage is very easily spoiled by coming in contact with the air.

S. W. Dungan, Franklin. Mr. Harris feeds from the top, and Mr. Furnass from the side. It seems to me that it would be inconvenient to feed from a large silo. I wish to ask which would be best, a large or small one?

Mr. Furnass. If we have a large number of cows we need a large silo. Mr. Harris says feed off the top; but we can feed equally as well from the side.

Dr. Collins. Do you take out the bottom door?

Mr. Furnass. I feed from the top down to the bottom and take out the lower door. It is a question of convenience about taking off from top and need not be discussed here.

E. J. Howland. What is the comparative value of an acre of corn made into ensilage with that put in shocks?

Mr. Furnass. I must say there is a waste of corn put in the shock; the smell and flavor gets off. The weather makes a loss even if you can get that fodder from the shock to the cattle corn and all, which is not the usual way but separates the corn and feeds the fodder. With the silo, you feed altogether and get the full value that the shock does not have. There is an increased digestibility in silage.

Question. What kind of corn do you use for silage?

Mr. Furnass. The first year I got southern corn. Mr. Harris condemned it, I got large stalks with incipient ears but none ripe enough to make good silage. Last year I thought I could get along as well by using our native corn, and this year I shall try a sack of V. and W. corn.

Prof. Stockridge, Purdue University. The question of interest is the relative market and curing food for cattle; whether clover is best in the cock for cattle or fed in ensilage and whether corn cured in the shock is preferable, or is there more food in the silo. We have been feeding thirty head of cattle on ensilage from January. We grew but one crop of corn, cutting alternate rows and carrying to the barn. Clover was also cut alternately and treated in the same way. We have prosecuted this work for the benefit of the dairy and beef interest. We have not finished this work and are not ready to give positive information. First, we have proven there is no difference in the digestibility, and no difference in the annual excrement or manure from that fed from the shock. We have proven there is no difference in the quality of milk but there is a difference in the quantity. What we did was this: We took eight cows, fed four on ensilage and four on shock feed for two weeks and then reversed it. We find by analysis and make of butter, there is not any difference in the fat or butter but a difference in the amount of milk produced and butter which we attribute to ensilage, which we think better than dry feed. The animals thus far fed on ensilage will give a yield of

ten per cent. increase in quantity. So far as beef cattle is concerned it was exactly the same. We took eight steers, feeding for two weeks. We found that animals fed on the ensilage give a faster increase in weight day by day than those fed on dry material; as much as four per cent. perhaps over those fed on the shock fodder. I have only given our experience so far as we have gone; perhaps when finished and all the experiments are given, we shall be made to modify every statement as different questions come in. How much more beef we have got; whether the silo gives more beef on dry feed. Now which costs the most? If I were to give an opinion I would say that which gives the best results is cheapest; but there is no difference absolutely in the material if dry fed from the shock, passing through the same cutter and fed side by side, find no difference in digestibility.

Hon. J. J. W. Billingsly of Indianapolis, presented the following paper on "Improvement of Public Highways."

IMPROVEMENT OF PUBLIC HIGHWAYS.

The influence of good roads in the development of the country, and in the increase of the value of agricultural lands, will be conceded by every observing citizen. The advantages to be derived are not confined to those living immediately upon the highways improved, but they extend to the entire community.

The increased facilities are beneficial alike to the resident citizen in the country, and the resident of the town or city. While it is true that agriculture depends largely upon the highways to get the surplus products to market at a time when the highest prices are to be realized, it is also true that the buyers of the products are dependent upon the highways to afford the facilities for trade at the time it is most advantageous to purchase.

Highways that are in good condition for travel at all seasons of the year admit of a regular trade and healthy business activity. Otherwise, trade is likely to be paralyzed at any time, on account of the impassable condition of the roads. The extent of trade that any town or city may draw is largely dependent upon the condition of the highways leading thereto. With a good road, A, ten miles distant is less difficult to be reached with a full load than B, located five miles distant, over a bad road, or roads that are barely passable, with half a load. The town of A gets the trade from a much larger area than does B, on account of the better condition of the highways leading to it. The cost of getting the surplus products to market over good highways is diminished quite one-half, less power is required, and less time, and less damage is done to teams and vehicles.

Towns and cities having manufacturing and trade interests of any considerable extent are dependent upon the country for regular supplies at reasonable prices. If the roads are so improved as to admit of regular travel all the year round, the needed supplies will be forthcoming as the demand may require, and prices and trade will be healthy the season through.

This is a very desirable condition of trade to those interested directly or indirectly. In short, the public and private advantages resulting from the improvement of the highways are incalculable, affecting all trade interest of high or low degree.

In the early settling of the country, it was hardly to be expected that much time or money would be expended on roads, when the entire energy was being drawn upon in the opening of the farms and the building of homes for the people. They had little time to consider the subject. They waded through the mud, and thought little of it; but that day should have been passed before the year 1889:

Roads, now, to some extent, are a test of the degree of civilization existing in a country. Their improvement should keep pace with the advance of the nation, in population, in wealth, and in the general intelligence of the people.

We have come to a time when it is necessary to expend enough money on a highway to make it permanently a good road; and by so doing it will cost less in the long run.

It has been the experience, in many of the road districts, that the patchwork system of improving highways has cost more money than it would have cost to put the roads in good condition while they were at it; and then the traveling public would have had the benefits during years that had passed, and for years that are to come.

The filling up of a mud-hole in one place, the cutting of a side ditch at some other point, with no outlet, and then the adding of a few dumps of dirt here and there in the line of travel, has been the very unsatisfactory method of road-working in the past—so unsatisfactory that a good piece of road all the year round has been the exception, the travel-way being uneven and unpleasant to drive over on most of our country roads.

We have come to a time when we ought to abandon such a method, if it can be called a method.

The next point to take into consideration is in the ease of travel, the less damage to the teams and vehicles, and the larger loads drawn, the actual cost will be lessened fifty per cent.

With the present condition of the roads, a full load can not be drawn at all seasons of the year; that is, such a load as might be drawn over a smooth, solid surface, with the grade reduced to the minimum. So we are experiencing a loss at any and all times for want of the necessary improvements. Suppose we take, for example, a full load, such as any good, average span of horses might draw over the roads in the best possible condition. Is it not true that such a load could not be drawn over our common roadways more than four months in the year? Then for four months more, not more than two-thirds of a load can be drawn, and for the remaining four months of the year not more than half a load can be drawn; and, at times, in many sections of the country, the roads are said to be impassable.

Can any one estimate the loss, in this direction, in the size of the loads drawn, for two-thirds of the year, not only to those who have produce to sell, but to the consumers and the general trade of the country? In a single county it will amount to many thousands of dollars in a year, enough, I apprehend, to pay the entire tax assessment, and more; and the labor and repair now wasted upon the misdirected improvement of highways would go far toward making good highways. After a road is once made good, it will cost much less to keep it in repair, than does the ordinary highway in its present condition.

SUGGESTIONS AS TO METHODS OF IMPROVEMENT.

The Road Commissioners, or those having in charge the construction and improvement of highways, should determine that, so far as possible, the labor and money expended should be expended upon permanent improvements; and one particular road should be put in good condition before undertaking another. Roads that are much traveled should have the precedent. After determining to improve, permanently, a particular road, the work should be so planned as to embrace the grading and leveling of the roadway, so as to make the travelway smooth.

The underdrainage of highways is very highly recommended where the roadways are likely to become saturated with water. No road can long remain in good condition, with a wet foundation.

The grading of the road should look to the rapid removal of the storm waters, by surface drainage. The underdrainage, by laying a line of tile to prevent water from soaking under the roadway.

The deepest and worst mud-holes are those that are caused by the percolation of the water up through the road-bed, until the travel from above and the water from beneath, make the foundation soft, so that the bottom drops out, as we generally say. Such mud-holes are lasting, and when finally dried up, the surface is left in a bad condition.

With a firm road-bed, as a foundation, the work is well begun.

The mode of underdrainage recommended by those who have had experience in this method of the improvement of the roads, is to put down two lines of tile, a line upon each side of the travelway, three or four feet inside the center of the open ditches (or gutters, as we call them.)

The drains should be laid at a depth of two, two and one-half or three feet, with sufficient grade and free outlet, to allow the earth water to pass rapidly away, in order to prevent its soaking under the road-bed.

Such a system of underdrainage will insure a solid foundation, under all ordinary circumstances. Such a method of improving roads will prevent deep mud at all times, and provide a good travelway the greater portion of the year. A way over which may be drawn a reasonable load, at all times.

With such a foundation, half of the gravel required on roads not underdrained will make an excellent gravel road; or if stone be used to turnpike the road, not more than half of the amount of stone will be required to make a good road.

With the road-graders now in use, the grading of a mile of highway perfectly, is no large contract, and, with the present low price of tile, it will not be expensive to underdrain; the latter, when once well done, is done for the next half century, at least.

A line of tile laid in the center of a roadway has been used in a few instances with good results, when laid at a depth of three feet or more below the crown of the grade; but the two lines of drains have been found to make the best and driest road-bed. They prevent the water from getting under the roadway.

Another system of underdrainage is to lay the line of underdrain on the side of the road where the water is likely to shed upon the roadway to prevent the water from soaking under the road-bed.

At all events, a dry and solid foundation is necessary to build upon in any improvement that may be made. We can not, I think, overestimate the importance of a dry, firm foundation upon which to make the best highways.

BRICK PAVED ROADWAYS.

It is very probable that in the near future brick will be used to make a narrow travelway about the width of the old plank roads. A layer of hard brick set on edge on cypress or solid oak plank, making a travelway eight feet in width, with a dirtway at the side allowing teams to pass without difficulty, will not be an expensive improvement when the ease of travel and the durability of the road are considered.

In Holland highways are quite commonly paved with brick. Prof. Roberts, of Cornell University, told the writer that in the Isle of Jersey he seldom saw a dirt road; that the highways were generally paved with brick. Some of these pavements have been in use from fifty to one hundred years, and with but little repair necessary. The brick used are required to be vitrified, but we can vitrify our brick as well.

The use of brick for paving streets is being quite generally introduced. At Charleston, W. Va., one of their principal streets they paved with brick sixteen years ago, and it has been in constant use since that time, giving very general satisfaction. A brick paved street at Bloomington, Ill., has been in use for fourteen years, and is in good condition to-day. Brick paved streets in other towns and cities have been in use for shorter periods of time, giving general satisfaction. In each of the towns named their streets are being improved in this manner. Bloomington, Ill., has put down six and one-half miles of brick pavement; Galesburg, Ill., six miles; Decatur, seven miles; Lincoln, Neb., five miles; Des Moines, Iowa, four or five miles. Columbus and other cities in Ohio are improving their streets in this way. The ease of travel and the smooth, even surface admit of the drawing of heavy loads, and the durability of the streets thus improved has exceeded all expectations.

If the towns and cities quoted adopt this system of street improvement is it not probable that in a few years the same system will extend to the country, along the most important highways, upon a basis somewhat in the line we have suggested.

Do not think the prediction tendered is incredible.

If we but do the work of grading, bridging and underdrainage well, we shall have a foundation ready for a brick paved roadway.

The chief hindrance in this work, is the voter. We mean that men upon whom the responsibility of levying the taxes, the providing for the best character of work, is laid, are afraid that they will fail of re-election if they move out along the advance line of such needed improvements. The voter is the power behind the throne, that the ordinary office-holder looks to, more than the general good of the country. What will the voter think; or, what will he do? This is the important question. Here the work of pushing such needed improvements is brought to a standstill.

We need better roadways, and we ought to have them; but that will depend upon the voter.

If what we have written will only serve to bring about a lively discussion and a more general consideration of the subject in country, town and city, the writer will feel well repaid for the suggestions offered.

DISCUSSION.

Dr. J. H. Smart; Purdue University. I think we are indebted to the Governor, the chief executive of the State for the high interest he has taken in the matter of good roads in our State. We are all alive to the importance of good gravel roads, which will add much to the prosperity of our State. While there is a gravel road in this State which cost \$4,000 per mile, I know of a gravel road, just as good, in an adjoining county costing only \$800 per mile. If we can get gravel roads by organization and get 99 cents or a little more for every dollar spent, we can afford to build. I know it costs considerable per mile when we take into account supervisors' and inspectors' fees. There are a hundred questions of importance which might be discussed, this is the reason why Farmers' Institutes are held and we make inquiries and find out defects and learn the remedy. These institutes are the means by which we can lift ourselves out of the mud.

Hon. J. A. Mount. The road question is an important one and I am well pleased with the thoughts contained in the paper, but not altogether pleased with the remarks of His Excellency, Governor Hovey. The question of one mill tax

on the dollar in Indiana would soon give us good roads is surprising to me. That assessment would not give Montgomery County one half enough, it would not give revenue enough to one half the roads in the State to keep them up. In the southern counties of the State where they have no gravel, they are tickled at the idea of having the State taxed to give them roads, but the people of Indiana will not be willing to have a State tax for road improvement. [Cheers.] Speaking of the spirit of enterprise in this direction, in graveling my county we have expended almost a million dollars, and other counties have spent quite largely, and will they be taxed to another public spirit, who spent nothing to help build their roads? Such a proposition is unwise, let a declaration of this kind go forth that we must have public roads and built at any cost, but be not deceived that the State of Indiana will build these roads. I regard it as unwise, but the importance of public highways is essential to civilization and progress, but when we tax the State, it is impractical.

Mr. Wray. I want to endorse the statement made on this subject; I come from a county that has quite a number of gravel roads. We have, perhaps, 250 miles in our county, some are free, built under the gravel road law, some purchased, and other purchases contemplated which we vote on at the April election. The great mistake with some is they start out with the idea that we are going to have splendid roads at a small expense. We make a mistake in this: If you expect to buy fine horses and clothes you pay fine prices, and if you have good roads you pay good prices.

Mr. Billingsly. I wish to have the audience keep this fact in mind that I do not recommend a State tax, but a county tax. I have not indicated the cost per mile. Some would cost more than others.

Dr. Smart. You do not understand the Governor, the mill tax was but the proceeds of the liquor license which might be used for building and keeping up the roads.

Adjourned to 1:30 P. M.

AFTERNOON SESSION—SECOND DAY.

Superintendent Latta called the house to order at 1:30 P. M., when the Institute was entertained for a short time with some excellent music.

Hon. J. B. Conner, of Indianapolis, read a paper on

THE AGRICULTURAL PRESS.

Agriculture, unlike some other callings, never deemed it necessary to send any one in advance with a bugle to announce it. Food and clothing, the essentials of life, even when hard to get, were always very suggestive of the farm and its importance. Herein, perhaps, lies the fact that the agricultural press did not start even in the race with other classes of journalism. The general newspaper, I think, had its origin in Greece, long before Paul's first missionary journey to Athens, for very ancient authority states that the inhabitants of that city were constantly seeking something new, and put up around the town thirty thousand inscriptions, which were said to have been about as valuable as the latest modern "long felt want" in journalism. Presses, type and paper were scarce in those days, and the gossip labored under disadvantages; but the penchant for something new found vent long before the agricultural press started on the road.

The agricultural journal in the United States had its advent in 1818, when John S. Skinner, (unfortunate name, for they never did it), began the publication of the American Farmer, in Baltimore, which gained wide influence and usefulness, and is still published. That was followed by the Plough-Boy, in Albany, N. Y., in 1821, which survived but a few years. The New England Farmer next appeared, in Boston, in 1822, and still lives. The Southern Agriculturist was begun in Charleston, South Carolina, in 1828. The Genesee Farmer was the next, at Rochester, N. Y., in 1830, and the same year the New York Farmer and Horticultural Repository was begun. The Maine Farmer followed in 1833; the Boston Cultivator in 1839, and the Massachusetts Ploughman in 1841. The American Agriculturist was started in 1842, and in the following two years several others of less note. The Indiana Farmer first appeared February 1st, 1845, with S. V. B. Noel & Co., as publishers, and the late Henry Ward Beecher as editor. It is called the Indiana Farmer and Gardener. The first and second volumes are now preserved in the public library of this city. The issues of February, 1845, quotes wheat in this market at fifty cents a bushel, corn twenty to twenty-five cents, hogs two and one-half cents a pound gross; cattle, two and one-half cents; butter, ten cents; eggs, five to six cents, and salt \$3.50 per barrel.

In 1870 there were ninety-three agricultural papers in the United States, with a circulation of 770,752. In 1880 there were 173 such publications, with a circulation of over one million copies, weekly and monthly. Now there are 300, including agricultural, stock, and horticultural papers, with a circulation of over three millions. Thus it is seen that the late comer in journalism is catching on pretty

fast. Nothing like it per capita of population was ever known in any other country. A noted agricultural journalist of Great Britain says that the circulation of the agricultural press there, is not a quarter as great in proportion to population as it is here.

The agricultural press has become the medium of the best thought of the world in the field of scientific and practical agriculture. For thirty years, with one voice, it has demanded better and better facilities for practical agriculture, and in that time has the fruit of its labor, in the establishment of agricultural schools and colleges, in every State of the Union, where a better knowledge of agriculture is taught, in theory and practice; in the opening of experiment stations in every State, and, finally, in the elevation of the industry to a place in the Cabinet of the Nation, a recognition of equality with the other great interests. The agricultural press lays claim to its share in these advances, for the general press, with some exceptions, fought these innovations step by step. This branch of the press is now laden with the teachings and experimentation of these colleges and stations, and the attentive reader on the farm is making a success in his calling, and, on suitable occasions, riding in carriages like other classes.

But let it be said, also, that there are still people on the farm who do not believe in "book farming," as they call it, and if they read agricultural papers at all, it is generally to feed on hobbies and complaints, and not to learn what has made their bright, chipper neighbors successful on the farm. And are there agricultural papers that cater to this class? Yes, assuredly, as there are hobbyists in every other field of journalism. They have learned of this constituency, and cater to it for money.

In the language of a bright agricultural writer, we suppose that it pays to cater to such constituency, for we are not green enough to impute any disinterested desire on their part to do good to that class of farmers. They will never tell them the God's truth, that they are robbing themselves through their ignorance and neglect to learn and practice better ways, more than many times the taxes of any government that ever reigned since America was discovered. They don't even try to teach them to farm it in such a profitable way that they will hardly think of their taxes. They do not talk to that class that have the intelligence to see that they get very nearly, and in many cases more than an equivalent for their taxes, in the way of schools, roads, bridge protection against fire, theft, etc. The Almighty can not prescribe a remedy for a farmer, till he tries to help himself and gets the intelligence to know what ails him.

The man who learns how to practice the art of making two acres of land yield 300 pounds of butter per annum, or one-fourth of a \$200 horse, or 800 pounds of beef or pork, has done more to give whining demagogueism and lazy incapacity a "black eye" than a million issues of the hobby press, which nauseate the thrifty men who know that this is the best planet that rolls in space and that the intelligent American farmer has his ranch on the best part of it.

I don't mean to say that the agricultural press is widely given to demagogueism and hobbyisms, but the truth should be confessed in a few cases. I think that in general it "chasteneth whom it loveth," frankly pointing out the mistakes of its patrons and friends in loving criticism, as it were, with the hope of living forever

and of having their patronage, who, by improvement of their methods, are thus better able to be good patrons, not only of their own press, but of all good works. And so the agricultural press should be true to its patrons, equally in pointing out errors as in commending good things.

It has already been shown that farm journals are rapidly increasing in circulation. But the farmer as a class are not so universally found reading the papers devoted to their interests as business men are the commercial press. I am told that shrewd wholesale mercantile houses draw the line of credit at the point of an intelligent keeping pace with commercial affairs, and that the class of retail dealers who do not read and keep posted in such matters can get little or no credit, because in long observation and experience it has been found that such merchants fail. Recently one of the best farmers in the State said that in going over the farms in his own county he determined to see whether he could not tell by looking at farm affairs who did and who did not read periodicals devoted to farm interests, and in the sixty noted down he missed it only in two cases. The fact is, that farmers who conclude that they know it all, and refuse to learn from the experience of others, still grow scrub stock at a loss and mortgage their farms for money to pay taxes. Neither the press nor the good neighbors of such can help them till they agree with themselves that they need it. "May their tribe decrease."

DISCUSSION.

Prof. W. H. Ragan, DePauw University. I endorse all that has been said. It is a good educator of farmers. The *Indiana Farmer* is the father of agricultural farmers' clubs, and, too, I am especially pleased with the statistics which the writer has been favored with enabling him to give us data concerning early papers. Men who started these papers are worthy of great honor. I am not an old man, born in Indiana something over thirty years ago, belonging in a family furnished with agricultural papers, weekly or possibly monthly, conducted by such men as Tucker, Weed and Beecher, who built up these papers in this country. Mention was made of the earliest enterprise in the way of an agricultural paper in the State. I can furnish, I think, all the honorable gentlemen who were connected in the early rise of the *Indiana Farmer*. He has given this honor to Beecher, but he started the *Indiana Farmer and Gardener*, and in my mother's house, in the garret, can be found copies of that journal, prior to 1845, but I will not debate that question. The late John Osborn, a

father in law of Mr. Claypool, who was the starter of the Indiana Farmer of 1838. Mrs. Chapin has papers within the last five years, of the Indiana Farmer, which I passed over to her, not the Indiana Farmer and Gardener, but Indiana Farmer. The Indiana Farmer has been a valuable educator, and we can not do without it in this age.

C. A. Howland. I fully agree with Brother Conner in his remarks, and doubtless we are all satisfied that he was talking in the right direction, but it might be well to throw out a word of caution. We don't want to think that they are perfection personified, because there is liability to corruption in the agricultural paper bosses. I do not want to do Mr. Conner any injustice. I used to read his paper, and that is perhaps the cause of my becoming a "bloated agriculturist." [Laughter.] I quit reading his paper because he advocated certain doctrine which I did not believe in. The men running these agricultural papers should be men that we can rely on; they should have not only theory, but practice. They have their experiments, but don't recommend, for instance, a certain kind of small fruit unless it is absolutely the best. This is the kind of paper I like. I want a paper that I can rely on. Mr. Conner's article is on the line of his belief.

Mr. Beeler. There was a paper published earlier than the Indiana Farmer and Gardener by a Quaker gentleman by the name of Wilson.

Mr. Pope. I have the first volume of the Indiana Farmer published in 1837.

J. J. W. Billingsly. That point in his paper in reference to prejudices of people reminds me that about the time the old year goes out and the new comes in certain classes of papers begin harping on the down-ridden condition of agriculture, and try to curry sympathy with the farming classes; such papers have a number of cheap jobs of advertising in their paper. I think we should take and read agricultural papers, but it is necessary to discriminate. There are some papers which show progress by the introduction of seed and various

cheap premiums, which the reader is made to believe he gets four dollars for one, and are misleading in their character. They live by occupying this field, and mislead a number of men honest in their intentions. I make exception to the Indiana Farmer in this particular, but I wish to call attention to the other class of cheap premium papers and point out these features in order to discriminate against them.

Mr. Patton. In these premium papers they advertise to get seed scattered broadcast over the country. They are a nuisance and a fraud on their face, but the Indiana farmer is not; it is a good paper.

Mr. Maize. I am pleased with the paper read by Mr. Conner, and especially on the points touching on agriculture. I have been interested in agricultural matters since I was a boy, and have been in the habit of reading good agricultural papers, and have received a great benefit from them. To get the boys interested in agricultural matters we should take first-class agricultural papers and pay for them.

Prof. Latta. Going in various parts of the State I find the agricultural press has a wonderful power to mould the opinions of men. Under the influence of the Indiana Farmer the way has been paved for Institute work. Although we had hearty co-operation of intelligent farmers, we did not meet with good success until we decided to state through the Farmer on order of application for meetings; then going out before the eyes of the people it was comparatively easy to go on. And it was comparatively easy to list fifty institutes for the season; but I do believe there is a great responsibility. We have papers which instill wrong ideas among the people, and we should use our influence and judgment to cut down the opposite class.

The Committee on Resolutions submitted the following, which were adopted:

Mrs. Virginia C. Meredith, of Cambridge City, presented the following paper on

THE PRIVILEGES AND POSSIBILITIES OF FARM LIFE.

The realities of farm life assume many phases—phases that are in harmony with the nature of the beholder. One will tell of all its hardships, another of its charm in the lovely June-time—city folk will talk of its independence, country folk of its drudgery. But the privileges and possibilities of farm life are not to be measured by what has been made of it, but, rather, they are to be limited only by what noble women and intelligent men can accomplish within its domain. A very prevalent notion, or popular sentiment, has been expressed in the oft-quoted lines of Joaquin Miller—

“ I have said and I say it over,
As the years go on and the world goes over,
'Twere better to be content and clever
In tending of cattle and tossing of clover—
In the grazing of cattle and the growing of grain,
Than a strong man striving for gain.”

I protest against this superficial view—a view that recognizes in farming nothing better than “content,” nothing higher than being “clever” at manual labor. I am not willing to accept one who is but a dull laborer on the farm as my ideal farmer any more than that the porter shall stand for the merchant, or the teller in the bank for the financier.

What is farming? It is an art, a science, and a profession. With this grand scope should not privileges and possibilities cluster about the farmer? Farming as a vocation allows the widest scope for individuality; here, more than in any other calling, can one have liberty to exercise the power of choice—the power of choice, that greatest privilege of existence—and it is also the greatest responsibility of life, for the power of choice involves the possibility of making a mistake (the probability, perhaps). Is it not Dr. Holland who illustrates that point graphically when he relates the sad case of a poor young man, just barely able to keep himself afloat, that tied a matrimonial millstone around his neck, mistaking it for a life-preserver? All conduct, intelligent or otherwise, rests upon the power of choice—we choose higher or lower thoughts; we choose better or worse aims; we choose noble or base friends; we choose good or poor methods of farming. Some of us, perhaps, would be inclined to resent it if we were to be accused of choosing to be a bad farmer practicing a bad style of farming. We would prefer to say that we had no choice; that circumstances were against us; that the seasons were uniformly unfavorable; but, if we sift our conduct to its primary impulses, how often shall we find that we do the worse, because the better is “too much trouble;” because we have not the patience for tiresome details; because we have not the perseverance in continuing. Choice, was never denied us. Our own acre and what we do with it is our personal concern. There is a close duty and a plain line of conduct for each of us with our own acre and our own brains. We are sovereign with our own acre. We can not, it is true, make it wider, but we may make it deeper. Tillage and fertilization will command maximum returns, and if we exercise our high privilege of choice—if we choose knowledge rather than ignorance of breeds

and their adaptations—we can select stock that will get the last ounce of value from the acre. We are to seek truth in all the lines that center upon the farm, that we may translate it into action; we are to acquire information so that we may discover what is best for our own acre, and, quite as important, that we may decide what is best for our own brain. Our tastes and preferences are to be candidly considered, as the best work is ever done on those lines where the brain is most inclined to activity. With this amplitude of intellectual view, we shall see privileges and possibilities crowding about the farmer and the life upon the farm. The vocations of the town, with its commerce, its service and its professions, are no more diversified in their character and in their demands upon taste and ability than are the pursuits of the farm. Each of a dozen different branches of farming appeal to the capacity and inclination of the individual.

The generation of farmers coming after us is to be congratulated upon the opportunities that will be its own. The new generation is being better prepared than we, to appreciate and appropriate the patient labor bestowed by thoughtful students upon the problems of soil and of heredity. It has been said that "to think is the prerogative of the human being," and do we not observe that when the child first begins to speak, the question constantly on his lips is "why." Life will ever be young, joyous, full and satisfying while we have and cherish the spirit within us that is asking "why." It is only when we make bread and believe that it is "luck" if it prove palatable, only when we sow our wheat and believe "the weather" makes or mars the crop, only when we rear colts and calves, and believe, with Topsy, that "they just grewed," only when we live on these dull levels, never asking "why," will we find farm-life hard, tiresome and uninteresting.

The farmer has a rare opportunity for becoming a manufacturer, an ideal manufacturer, the very highest type of manufacturer. That nation is most prosperous and illustrates the best civilization whose exports leave her shores in the ultimate form fitted for consumption. Does not this maxim apply to the farm? Webster defines a manufacturer as one who works raw materials into wares suitable for use. This is notably the privilege of the farmer. Professor Roberts says: "History does not furnish a single instance of a nation rising to any degree of civilization whose food was composed of a few unconcentrated products." He cites the Indian as an illustration. "The Indian, in his cold and cheerless wigwam, is a being less cleanly and less companionable than the brutes of the field; he eats from a kettle his food, the putrid carcass and entrails of some wild animal, garnished, perhaps, with a few kernels of corn or bitter roots; he is the type of man produced by too primitive food; he can originate, he can invent nothing." Nourished by such food, his nature did not develop the finer elements; he was incapable of defending his home; of holding against the invader this grand country, which was his natural heritage. But what of the man that has butter, milk, sugar, bread, luscious fruits? What effect have these expensive refined and concentrated foods upon the man who consumes them? This magnificent country that he has conquered, and science, with all the applied forces of nature, bring an answer that is the glory of our age. The elements that sustain all life lie in the soil beneath our feet; they constitute the "raw material" of the farmer. The earth worm takes its food directly and with an instinct so low

that we have the proverb about "the early bird." On the other hand, the soil nourishes the grass, the farmer selects and cultivates that grass until it buds, blossoms and matures the seed that we call grain; that grain, already twice refined, is fed to the cow, her system assimilates it and then we have the juicy steak, which, when refined by another of nature's forces, fire, will feed the brain that can harness the lightning and chain the vapor. Or the grain may, through the mammary glands be transformed so as to become the perfect food, milk, and that may, in turn, pass under the magic power of man, and then, to quote again from Professor Roberts, "Lo! he has enchained a golden grain of butter that has slipped down to him from the gods on a golden sunbeam!" Better food makes better men. To improve the food of a nation is a worthy ambition and a noble vocation. To make such improvement is peculiarly the privilege of intelligent farmers in this latitude. This is a favored latitude. Sir Charles Dilke says: Self-government, personal independence and true manliness can exist only where the snow will lie on the ground—cringing slavishness and imbecile submission follow the palm belt round the world." "Books are made where wheat grows; life acquainted with frost has more fiber, more nerve in it," says Myron Reed. Is it not a curious coincidence that the grasping intelligence thus indicated, belongs to the latitude capable of the highest type of farming?

It lies within the province of the farmer to be an artist—he may create that which realizes an ideal, he may become the very highest type of artist. It has been well said that the farmer's business has to do with life; he makes or brings about the conditions for its creation or development—now in the lower form of vegetation or again in the higher form of animal nature. When we consider the farmer's wheat we see one of the exquisite wonders of nature; we behold a unique formation of stamen and pistil; a formation so unique and unvarying that, since the first dawn of creation, it has borne on its own nature, that unique formation forever guarding the purity of the precious grain. The wheat of to-day is the wheat of yesterday, the wheat of Pharaoh, the wheat of Adam, doubtless. But if we turn to the domestic animals we discover the law of variation by and through which is opened to man a grand domain for the exercise of intelligence. There we find him molding into beauty and value "the red, white and roan;" the beautiful Jersey or the thoroughbred. The thoroughbred of to-day is not the horse of Pharaoh. Think you that the thoroughbred has that graceful pose, satin coat, clean bone, strong sinew, glorious courage and docile temper by nature? No, he is man's work! He is as absolutely the realization of an ideal, as absolutely the result of intelligent thought, inspired patience and loving enthusiasm as is the tinted canvas of Millet, the music of Wagner, or the drama of Shakspeare! Are there not great possibilities and high privileges in the pursuits germane to farm-life? Whose heart has not been thrilled by Buchanan Read's story of Sheridan's ride from "Winchester, twenty miles away"? Why was that ride a reality, and not a mere poet's fancy? Only because he rode

"A steed
Strong, black and of a noble breed;
Full of fire
And full of bone,
With all his line of fathers known."

It was pedigree, with all that that implies. Which shall we say was the better brain, the one that bred the horse or the one that celebrated the horse in song?

The gates of opportunity open wide to the educated farmer. Prof. Marshall, in his great Birmingham address, said: "In the world's history there has been one waste product so much more important than all others that it has a right to be called *the waste product*." He refers to "the higher abilities of many of the working classes—the latent, the undeveloped, the choked-up and wasted faculties for higher work that, for lack of opportunity, have come to nothing." Can not he, on the farm, make his own opportunity? Is not "higher work" one of the privileges of the farm life? We plant, and sow, and reap. May we not also think? There is a general impression that on the farm mental vigor is denied an outlet; that it is choked up or wasted; and is it not some such conviction as this that impels our young people to seek the city—to seek the great currents of thought? What are we doing to make girls and boys in love with the farm? Are we forgetful of the graces and accomplishments of life? Are we devoted to the accumulation of property? It has been said so often that the soil holds all the real wealth of the world—so often said that the farmer feeds and clothes the whole world—that the idea of material property has become firmly lodged in our conceptions of farming. Too often the farmer himself has found "property" the key-note to the music in nature. Tennyson makes his old north-country farmer to say:

"Doesn't thou 'ear my 'orse's legs as they canters away?

Propputty, propputty, propputty—that's what I 'ears 'em say."

While money and profit are legitimate, worthy and indispensable incentives, is it well to be so absorbed in thoughts of accumulation as to be in danger of ignoring womanhood and manliness? James Parton says: "If any young man were to ask me, shall I become a farmer? I would have to reply by asking him another question—Are you man enough?" Think of that; recall how from a crude form of farming has been evolved agriculture as a profession, directed by intelligence and sustained by capital. And has it not been a grand evolution—evolution truly, but involution as well? The mind of man has been involved in the work—the sweat of the brow has made obeisance to the travail of the brain. The farm of the future will demand more of the farmer; keener faculties and better trained; incisive discrimination to hear and heed the suggestions of nature, to enlist her every energy in his behalf. We hear too much talk of farming as if it were an exhausted industry, when really we have but the most vague and inadequate conceptions of its possibilities as a profession and an industry. Let us distinguish between the farmer and farming. Farming goes on forever; it goes on best when in harmony with the laws of nature, laws that are fixed and unchangeable, laws that are obscure, perhaps, but surely patient investigation and intelligent thought will ultimately bring them to the sunlight.

Let us dignify our calling; let us exalt our home on the farm by making it the abode of intelligence, refinement and comfort—the abode of peace. Let us make much of our farm and our farm life, let us cherish its privileges, let us realize its possibilities. The farmer alone, of all men, has a home. When we read descriptions of the ideal Southern home, is it not the home on the plantation?

When we read of the typical New England home, is it not the farm-home? When we read of the hospitalities and good cheer of the Western home, is it not the country home? The family, that great institution ordained by the Father, should find nowhere else such congenial conditions for its development. Dr. Hough, in his report on forestry, tells us that oak grown in free air weighs twice as much as that grown in dense shade. May not the boy grown in free air develop more manliness than one dwarfed by the close crowding of other natures? It was the wife of a Jewish rabbi who, laying her hand upon the head of her black-eyed boy, exclaimed: "This is immortality." That mother was willing to rest her claims to immortality upon what she made of her child. And must not he who achieves immortality by pen or picture give precedence to the mother that guides a child into true and noble living?

In conclusion, may I hope that you will find something suggestive in the two pictures that I am going to present—one the aspiration of boyhood, the other the regret of age:

An old farm-house with pastures wide,
Sweet with flowers on every side;
A restless boy, who looks from out
The porch with woodbine twined about,
Wishes a thought formed in his heart,
"Oh, if I only could depart
From this dull place the world to see,
How happy, how happy I would be."

Amid the city's ceaseless din
A man that round the world has been,
Who, 'mid the tumult and the throng,
Is thinking, thinking all day long,
"Oh, could I tread once more
The field-path to the farm-house door,
The old green meadows could I see,
Ah me, how happy I should be."

DISCUSSION.

Mr. Wray, Shelbyville. I was deeply interested in one point. Speaking of personal experience on the power of choice, I was a young man once, and not much over "thirty," yet when I struck out on the farm for myself, my father talked to me and asked me why I did thus and so? He had never done so, or my grandfather, or neighbors, and you can not afford to do this or that way. I answered that I could not afford to do otherwise. The point I wish to call attention to is, of all the professional students in the world, the farmer can least afford to work with poor material, or to have his ground or capital in

bad condition. If he chooses right, as has just been said by the lady, if we try to make better the way of improved methods, we will get there; that is my personal experience. While my farmer friend and neighbor went down, I went up, and they had as good intellect as I had. The only difference is this: I could not afford to do without the best, and they thought they could do with any thing, and consequently made a mistake.

Hon. Milton Trusler, Bently. I endorse the paper in full, and frequently think those who live in the country have a great incentive, great and noble thoughts, acts and purposes, while those who live in the city are daily coming in contact with the works of man and those living in close proximity with green fields, orchards and gardens, and beautiful flowers are in close communion with the works of God. We are living in the midst of the works of Providence, surrounded by His productions, dependent on the soil to produce that on which we live. Our works are His works, and results of our labors is the result of His labor, and "it is in Him we live, move, and have our being." Can I repeat, there should be high and noble thoughts to those who live in the country.

Mr. Maize. I have heard this paper read three times, and am more interested now than at first, and we can all be profited by hearing it, and endeavor to keep at the head of the procession. I am much interested in farm work, and hope for greater improvements.

Hon. J. A. Mount. I have heard Mrs. Merideth discuss Privileges and Possibilities in Rural Life, but never heard until to-day such new thoughts clothed with new beauty.

J. W. Apple. Yesterday morning when the Institute opened we had some excellent music. It was asked, what has that to do with the farm? I want to ask, is it possible that your boys and girls can be musicians as equal to the boys and girls in the city?

Mrs. Merideth. I will just say in answer to that question that the people on the farm are as capable of all that is noble in the way of accomplishments as in the towns. I do not see

why they could not be as good musicians as in the town, and I say many times they might be better.

Professor Jones, High School, Indianapolis. I came in too late to hear the reading of much of that admirable paper. I would suggest but one single idea. People talk of enjoying themselves on the farm; I wonder if it would not be a delightful change to attempt to enjoy other people and bring around certain social elements that have not always been there.

Mr. Wray. I was going to say, we underestimate our professional calling; another reason is, the wealth is centered in the cities and boys like to be there where the money is. History has recorded the fact that the wealth is centered in the cities. If you take the history of the nation before us we find that this concentration which ought to be in the hands of the farmers is in the hands of bankers and other wealthy people and the farmers' interest fails and it is so here to-day.

Mr. Pope. What can we make at 16 cents a bushel for oats and 25 cents for corn? This is the cause of many leaving the farm.

President J. H. Smart of Purdue University addressed the Institute on

INDUSTRIAL EDUCATION.

In my travels over this State during the past twenty-five years, I have learned two very important things. The first is, that this is a great State, and a very good State. The second is, that the people don't know it. In other words, Indiana is a much better State than the average citizen believes it to be.

I have said on many occasions that the chief glory of Indiana is the fact that its men and women are intelligent, and that they have been wise enough to establish and maintain a system of public schools, that are second to none in the country. Those of us who have had a share in the work of building up and perfecting this great system, have had, I think, reason to be proud of the results that have been achieved.

I have said and still believe that our system of public instruction is as good as any in the country; better than most, and that it is producing results of incalculable value. But our system is not quite perfect. Indeed, many of us think that it has serious defects.

For my part, I am free to say that there is an enormous wastage going on in the administration of our school affairs and that the money and effort that is spent upon our schools does not produce one-half what it ought to produce.

The best thinkers in the educational field have been at work for years in studying the defects in our public schools, and in devising new and better methods; and so there has come about a great interest in what has been called "the new education." It is of one phase of this new education of which I wish to speak this afternoon.

One of the purposes of the new education is to train a boy in such a way that he not only knows something, but that he is able to do something. Knowledge is a good thing, but the ability to apply knowledge is a better thing. We want young men who are not only able to behave themselves, but who are able to earn a good living. We want men who can take hold of the practical every-day affairs of life, and move things as they ought to be moved.

We have made mistakes in educating our children, because we have tried to educate them in the old way; in the same way in which you and I were educated. We have made mistakes, because we have forgotten that the modern boy lives in a new world; a world very different and very much larger than the world into which you and I were born forty or fifty years ago. Since you and I were young, the railroad, the electric telegraph, and the newspaper, have come in, and have created a tremendous revolution. They have made the boy of to-day a new boy, and have placed him in a new world.

Now the new education aims to fit a boy to live, and live properly, in the world that now is. Is it possible to give a young man a good education, and at the same time fit him to take hold of the practical industries of life? I know of no better way of answering this question than by telling you what has been accomplished in the Mechanical Department of the Institution with which I am connected.

It is the purpose of our School of Mechanical Engineering to afford young men an opportunity to acquire a good collegiate education in Mathematics, Science, Literature and Art, and at the same time to secure instruction and practice in such lines of work as will fit them to engage in the practical industries of life.

The student has his four years' instruction in Geometry, Trigonometry, Analytics, Calculus, Physics, Chemistry, English Literature, History, Psychology, Political Economy, and in modern languages. In addition to this, he spends two hours a day for a period of two years in carpentry, wood-turning, pattern-making, molding, blacksmithing, and in machine work.

The usual methods of text-book study, recitation and lecture are employed, but the student is required to put into practice so far as possible the instruction which he receives. He, for example, not only receives instruction in regard to the theory and principles of drawing, pattern-making and machine construction, but he is required to make working-drawings himself, to construct patterns, to make the castings in the foundry, to finish and set up the machine, to operate it when it is completed. This combination of the theoretical and the practical characterizes the institution.

During the last two years of this course he spends two hours per day in making plans and designs for machinery, in testing building material, in boiler and engine tests, in dynamometric tests and in advance experimental engineering; but it is of the work of the first two years of which I wish to speak chiefly.

Now, the average boy will spend three years in learning the carpenter's trade, three years in learning the blacksmith's trade, three in learning pattern-making, three in the foundry and three in learning to become a machinist. It will doubtless take the average boy ten years at ten hours a day by the ordinary methods to master these five trades. Experience shows that 95 per cent. of our boys can produce superior results in all these departments of labor by working two hours a day for the first two years of his college course, or an aggregate of 720 hours.

(The President here exhibited a large number of specimens of joinery, pattern-making, castings, forgings, and of machine work, which were closely examined by all present and pronounced remarkably fine specimens of work. Indeed, this examination proved one of the most instructive features of the address, and deeply impressed all with the great benefits arising from this line of education).

Continuing, President Smart said :

You ask, how is this accomplished? In the first place the boy is instructed in the theory of work; he is taught in respect to the use of tools; he is set to work to do the thing himself under competent instructors; no attempt is made to make money out of him. So soon as he learns to do one thing well he is immediately set to work on another involving a higher degree of skill. His ambition is aroused because he discovers that he can very soon learn to do a fine thing. Since he has learned to make and use working-drawings there is an accuracy and a precision about every movement that he makes, and all these things bring the desired result about easily and satisfactorily.

You ask if what they have made has been put to any practical use. Yes, our boys have made many machines that are now in use in our shops, and have furnished other technical schools with similar appliances. While they spend much of their time at first in doing work which may be called practice work, it is intended that all may have a hand in making some machine that is put to a practical test.

Here, for example, is the picture of a stationary engine. It works as perfect as any engine we have ever used—indeed, it is more perfectly finished than most of the engines that are on the market.

(A picture of an engine was here shown, together with pictures of cupola furnaces, forges, lathes, etc., which the President said had been made in considerable numbers).

It is by this process that the boy sees that what he does means something, and every freshman understands that what he is now doing may become a part of a useful instrument. I may say that two years ago our boys made and sold thirteen machines, and they are now in use in the Alabama Training School.

If you want to see boys interested in their work, you must watch them about the time the various pieces upon which they have been working are brought together and set up into a living, breathing, moving piece of machinery.

Some of you will ask, is it your purpose to make carpenters and blacksmiths? I answer, this is our incidental but not our final purpose. Our purpose is to teach the principles that underlie all the constructive trades, and to fit the boy to become a designer of machines, a master of construction; in other words, a mechanical or an electrical engineer. We hold that a mechanical engineer should himself be a

mechanic. I may add that we hold also, that a civil engineer should be a good mechanic. Those who wish to become expert mechanics merely remain with us two years, while those who wish to become engineers remain four.

There are two or three questions which are often asked, which I will answer.

Question. What per cent. of your boys become expert workmen?

Answer. Over 90 per cent.; as large, if not larger, than in any other department of work.

Question. How do the boys who take instruction in mechanics stand in their academic work?

Answer. They generally stand very high, and there is a reason for it. When boys do a fine thing in one direction they are likely to do a fine thing in another. Then again, when the boys have put two solid hours into hard work in the shops, they are prepared to go to their rooms and sit down and study, and with a freshness that enables them to accomplish a great deal in a short time. I think I can say that the average boy who spends two hours in the shops can do more with a given number of academic studies than a boy who does not. Thus we see that whatever is obtained from shop practice is *more than clear gain*.

Question. Why do you give instruction in wood and iron and with no other material, brick and leather, for example?

Answer. We give instruction in the use of wood and iron because a larger number of constructive trades are based upon wood and iron than upon all other materials combined.

Question. Is not your work objectionable on the ground that your graduates will enter into competition with workmen who are now already in the field?

Answer. Is it possible that there is a man in this country who is afraid of the competition of his own child? If there is such a one I think I can give him a good answer. My answer is this: The meanest form of competition which a good workman has to contend with is the competition that comes from a man who has spent little or no time in learning his business, and who, therefore, produces an inferior job at a lower price. This is the only form of competition which a good workman need fear. If a man does as good a job of work as you do, he will charge a fair price for it. This is not the kind of competition that has evil in it; indeed, it is, in a sense, a co-operation; at all events it is a good thing, a healthful thing.

DISCUSSION.

Professor Stockbridge, Purdue University. I had no idea of saying any thing on agricultural education at all; but since it is desired I will speak a few minutes. We all recognize that some thing is necessary for the farmers to enable them to carry on their work more successfully than they do. We recognize the fact that some thing is lacking and many solutions we recognize have been proposed; I propose, therefore, one of the

reasons they are not successful in agricultural industry is a lack of a more thorough understanding of the underlying principles controlling on the farm. An agricultural education that is calculated to place the farmers in a position which would enable them to carry on the farm successfully. Perhaps you may be posted in this matter that agricultural education means book farming, that book farming is objectionable and conflicting between theory and practice. An agricultural education as proposed, many professors are utterly ignorant of the application of farm methods. We must have a practical application as well as theory. There are men who are called big farmers, yet do not much, if any, work on the farm, but they have gone through the mill and can tell from a practical experience what are possibilities of agricultural education. We recognize the fact that something is necessary, that this agricultural education places a practical underlying principle, resulting in a benefit to the farmers, that "knowledge is power;" that knowledge is power no matter in what direction it is placed. Agricultural education is nothing more nor less than young men and farmers directly in possession of the knowledge concerning their profession which is "power," and that is all there is in it. We recognize the fact that we have got to have something that is more thorough and practical of our industry. Now, you understand when we take a student and instruct him in the principles underlying, he has a certain amount of book knowledge. Let us see if some things do not have direct application to the farm; whether by book learning this is not possible. What is the business of the farmer? It is the production of crops. What are crops? They are plants. What are plants or living beings? The production of plants and production of animals, both living, endowed with life the highest principle of creation. It is the business of the farmer, in the sight of God, to produce, grow and control these plants and animals; to carry on that industry it requires a great outlay of knowledge in the way of practical cultivation of the soil to produce crops and animals. The science of chemistry has direct application to the science of farming. What is geology? It treats of

rocks. What are rocks? They relate to the structure of the earth and soils. What are soils? That which is converted into plants. Geology tells what our soils are—what they come from. The knowledge of entomology has a definite application to the farm, and the man who knows most about insects is the man to control this pest and exterminate and enable you to overcome the obstacles surrounding you. Now what are we doing at Purdue? We instruct not only in the principle and theory found in the book, but, further, we say to the farmers, that the greatest result under all circumstances is by and through a union of practice with theory. There is no antagonism in teaching the principle even in getting it from the book, then take them on the farm and show them by way of application that, that is principle and that practice. Our instruction is both theoretical and practical and consisting both in the class and in the field; the principle underlying first, and then application of this, this line we are following, and results are quite satisfactory. Many of the students come to us not requiring this instruction, having received this at home which is a better way. Each of the theories must have a definite application, if the boy has not received this instruction before coming, we endeavor to give it to him. While there are not more students at Purdue, there are many reasons they are not there. If the student is sent there to gain this knowledge of the principle, then he receives it; but, on the contrary, if he does not retain this knowledge imparted, we are not responsible if we do not make a farmer of him. The agricultural department does not take students away from the farm but 90 per cent. return to the farm. We hear frequently of agricultural colleges of America taking away from the farm; if you look this matter up you demonstrate the fact the average agricultural college of America send back to the farm a larger proportion than any other professional institution in America. The agricultural colleges of America are sending back on the farms a larger proportion than the theological and medical schools are sending into the courts. So I say in conclusion that the agricultural department is carrying out the work to the best of its ability.

If the pupil comes there with the idea of again returning to the farm and don't return you can not hold the institution responsible. If he take in some other line of business the agricultural department is not responsible, but the parents at home must be held responsible.

Adjourned until 7 p. m.

CLOSING SESSION.

The Institute met at 7 p. m. with Superintendent Latta in the chair.

Hon. Elisha J. Howland presented a paper on

FISH CULTURE AND PROTECTION.

If an apology is necessary for introducing the subject of fish culture and protection to a Farmers' Institute, it may be found in the fact that the general government has appointed a Commission of Fisheries, who has established, by the aid of a corps of assistants, extensive hatcheries in the different States from which millions of fish are annually distributed to those who make application for them, and during the past season has had men employed in gathering up the desirable fish left by the receding waters of the extensive bayous and ponds, and is now distributing them to the different States to restock their depleted waters.

The State of Indiana, following in the lead of other States, has appointed a Fish Commissioner, whose duties are to assist in the distribution of fish furnished by the Commissioner of Fisheries, to promote their culture, and prevent destruction of fish within the State.

Farmers can render greater assistance in this work than those engaged in other pursuits for the reason that they are the owners of a large per cent. of the fish bearing waters of the State, and live contiguous to the waters they do not own, and it is only through them that the laws enacted for the protection of fish can be enforced.

Now in the outset if I make any statement that taxes your credulity too severely, I ask that you do not credit it to a desire on my part to exaggerate, but rather to a lack of information on the subject.

There is no industry within the borders of the State of Indiana of equal magnitude that has received so little care and in which so great gains may be made by kindly and judicious legislation, or in which such great loss has resulted by reason of unwise, and I might say vicious enactment (this may not apply to waters north of the Wabash River).

Mr. Peelle, of the Bureau of Statistics, estimates the fish bearing waters of the State equal in area to 5,000,000 acres, and it is an amount so vast that we can more readily comprehend its greatness by comparison with other areas.

The acreage sown to wheat in the year 1889, is given at 2,773,833 acres, and to corn planted the same year as 3,418,051. The combined amounts of these staple crops only exceeding the amount of fish bearing waters 1,191,934 acres.

Reports show that we have 9,537,213 acres in cultivation, 7,118,334 acres in timber, which leaves 6,215,853 acres to be divided between town sites and water, or to be accounted for in some other way not included in any tables at my command.

Assuming that 5,000,000 acres are correct, it would not require more than one-half dozen fish to the acre to yield annually one dollar for each acre, or \$5,000,000 for the whole, which is less than one-tenth the capacity of the water.

Professor Jordan tells us we have one hundred and fifty-five different kinds of fish which frequent the waters of the State; he also tells us that about ninety of these are so small they are of no value except a food for other fish, then we have some of the other varieties, although large, some are not good for food. All the kinds are not found in central and southern Indiana. The fishes found in central and southern Indiana may be divided into two classes, which, for convenience, I shall designate as game fish and suckers.

The game fish take the hook readily, and are difficult to capture with the sein. In this class we should assign the catfish family, the sunfish, red-eye, croppie and different kinds of bass. And it is this class we should endeavor to increase, because of its better quality.

The sucker family do not take to the hook readily, and are easily captured with the seine. To this family we should assign the buffalo, quill-back, carp, red-horse, the black, white, May and mud suckers. They, probably, constitute three-fourths of all our food fishes.

There is such a difference in the habits of the two classes named, and the food upon which they subsist, that to designate a single mode of capture causes great loss in the food supply available. If we discard the hook, but few bass and no catfish are taken, and beside we deprive the people of the State of a healthful and enjoyable recreation. If we discard the seine, but few of the most numerous class are taken, and the loss is materially greater. And here lies the greatest difficulty we have to surmount, if we are to derive the greatest possible benefit of which our waters are capable.

And it is possible that there is as great a dissimilarity in the waters of the State as in the habits of the fish. The lakes may not produce as great a proportion of the sucker family, and a larger per cent. of game fish, and I am inclined to think this is true. I think to state the matter fairly, I can safely say that we have a scarcity of game fish in our streams, and an abundance of the less desirable sucker family, which order ought to be reversed if there is to be a preponderance of either.

This result, however desirable, can only be reached by overcoming an unfounded prejudice against the use of the seine; and this prejudice is mostly entertained by those who know least about the destructiveness of the seine, and who accept the assertions of those who know but little more than themselves as facts; and to those who object to the use of the seine, and who are willing to be convinced, if in error, I would advise them to make inquiry of truthful men who

have had experience in using the seine, and I predict that their testimony will be that not ten per cent. of the amounts taken are game fish, and to obtain so great a proportion as this, special preparation must be made for their capture. And I am convinced that if the use of seines is permitted, with meshes not less than one and one-half inches, or one and three-fourths inches, if thought better, they will more than compensate for all losses sustained, by giving increased room for game fish, and in removing one of the enemies which prey upon their spawn. And I am certain the millions in value of food furnished the people by the use of the seine, will make good all loss in game fish many times over.

The use of seines was prohibited more than twenty years ago, and there has been no increase of game fish, at any period during the time, but there has been a decrease continuously during the whole period.

It is true the law is frequently violated, and in its present form it is impossible to enforce it, for the reason that those who only can enforce it do not respect its provisions. They can not be made to see the justice of losing one thousand pounds of suckers in order to protect one hundred pounds of game fish, when they know ninety of the hundred pounds of the game fish will protect themselves against the seine.

I think a law embracing the following, or similar provisions, would meet with general support, and be a great benefit to the whole people:

1. Make the penalty for entering the lands of another, without permission of the owner, for the purpose of fishing, the same as the game law now is for entering to hunt with a gun or dogs.

2. Make a close season for all fish covering the spawning season.

3. Increase the penalty for using dynamite and other deleterious substances.

4. Prohibit fishing for sale or selling such as we desire to protect, naming the kinds, as in the game law for game.

5. Allow the prosecuting witness suitable compensation for his time while engaged in assisting in the enforcement of the law, to be paid by the violator of the law.

If all the provisions embraced in the above suggestions would not benefit the lake region, let only such apply as would be beneficial.

Then organize game and fish associations in each county, which shall be auxiliary to the State Game and Fish Association, organized on the 19th of December, last, and we can reasonably hope for better results from this great area of water.

DISCUSSION.

Mr. Stevens. What kind of fish would you place in a pond fed by springs?

E. J. Howland. I would introduce cat-fish and bass. The channel cat is best, perhaps. I prefer the cat to the carp. The

carp will exceed in number, and on any kind of water, if put where they can have good running water, they are a good fish and are very tenacious of life.

Mr. Maize. What plan would you recommend in catching carp? I have not had much experience in that direction.

Mr. Howland. That complaint is general; that is my trouble. I have plenty of them from ten to fifteen pounds in weight. They jump like bass and skulk like a cat.

Mr. Furnass. Can you catch them with net?

Mr. Howland. We seine.

Mr. Furnass. How long have you been interested in the culture?

Mr. Howland. About seven years.

Mr. Stevens. What is the condition of the muley cat?

Mr. Howland. I know of none but what we have in our waters. We have the channel cat, which is second best. I have my doubts, although Colonel Dennis recommends channel cat for pond. I think there should be an outflow of water to make the channel cat a success. The channel is of a bluish color, covered with spots.

Mr. Stevens. There is a gentleman whose name, I believe, is Dye, residing at Philadelphia, Ind., who says they are superior to our cat. I have been told that the channel cat would not breed in a pond, but must have running water.

Mr. Howland. Colonel Dennis says they will breed in a pond.

Professor Latta. Is there any difference in the north part of the State as to water?

Mr. Howland. It is different from the southern part. They have no gravel, but mud, and the streams are more sluggish, which is not the home of the sucker. Their breeding places are gravel bars in the creeks. I think carp and sun-fish in that kind of water is more common.

Mr. Johnson. The gentleman who read the paper is right about the northern part of Indiana. They are not troubled with the sucker, the smallest are sunfish and perch, neither one amounting to very much, but Blue Hill sunfish and bass and pike are best in that part of the State.

Mr. Maize. This question of food fish ought to be of more interest to the citizens of Indiana in the way of protection and propagation. I think there is more in it than people generally imagine after giving it proper attention.

Mr. Furnass. Is there any fund appropriated for stocking streams and is it the duty of the Commissioners to stock them.

Mr. Howland. He receives his supply from the United States Commissioner and you order through him. We are expecting to have bass put in White River this spring.

Mr. Furnass. Does the Commissioner consider frogs as coming under his direction?

Mr. Howland. I do not know.

Mr. Furnass. They are quite an article of food.

Mr. Stevens. We have in our part of the State some engaged in frog culture.

Mr. Maize. What amount of water should we have in a pond to raise fish?

Mr. Howland. I do not know, but I think we should have enough to flow in and flow out again, keeping a constant moving of the water.

Professor Latta. Is there enough in it to justify making artificial ponds?

Mr. Howland. As a matter of dollars and cents I suppose there is not, but as a matter of recreation and supply of food I would say yes. I have never attempted it with a view beyond that.

Prof. W. C. Latta presented the following address:

THE INSTITUTE WORK.

BY W. C. LATTA, SUPERINTENDENT.

This Institute closes the series of 1889-90. From first to last this has been distinctively a farmers' movement. The Institute Act, approved March 9, 1889, owes its origin to a resolution passed by the Miami County Farmers' Institute. Said act appropriated \$5,000 for holding institutes in the several counties of the State, for the purpose of giving instruction in theoretic and practical agriculture

and horticulture, and in the economic sciences related thereto. The execution of the law devolved upon the authorities of Purdue University. To undertake the holding of ninety-two institutes—one in each county, as contemplated by the law—with only \$5,000 to defray all expenses, seemed indeed a difficult task. The work, which was begun with many misgivings, was left by the Trustees of the University to a committee on institutes, consisting of President J. H. Smart, Dr. H. E. Stockbridge, and the writer.

PLAN OF WORK.

It was decided to hold half the Institutes during the season 1889-90, if possible, and carry the work into alternate counties of the several agricultural districts. The members of the State Board of Agriculture were asked to co-operate with the Purdue committee on Institutes, and those who consented to take an active part were requested to arrange for consecutive Institutes in their respective districts. The plan of going into the alternate counties was soon abandoned as impracticable, and applications for Institutes were therefore booked in the order received. This course prevented a uniform distribution of the work, but enabled the committee to hold a larger number of Institutes than otherwise would have been possible.

APPORTIONMENT OF THE FUND.

Of the \$5,000 appropriation, \$3,680 were set apart as a *direct* allowance to the several counties, this being \$40 to each one that should hold an Institute under the provisions of the law. The balance, \$1,320, was reserved to defray the expenses of the central office, including the traveling expenses and a part of the salary of the Superintendent when engaged exclusively in the Institute work. This reserve will prove inadequate, which will necessitate an additional outlay of several hundred dollars of University funds to complete the Institute series of next year.

PUBLIC SPIRITED INSTITUTE WORKERS.

Appreciating the inadequacy of the appropriation to defray expenses and pay speakers a per diem, over one hundred intelligent, generous-hearted farmers, horticulturists and stock raisers have freely devoted time and talent to the Institute work. To the unflagging zeal and earnest, efficient effort of the men and women who have joined in the work, the success of the Institutes has been largely due.

AN ACTIVE CAMPAIGN.

With the exception of two weeks in November, institutes have been held in unbroken succession during the five months ending March 31. The Institutes—numbering fifty—have been fairly well distributed throughout the State. Audiences have ranged from less than 100 to nearly 1,000 people. Every meeting has awakened a keen interest, and many have been full of enthusiasm. When thoroughly advertised, the audiences have been large, despite inclement weather and bad roads.

GENERAL ENDORSEMENT OF THE WORK.

The Institutes have received the earnest endorsement of the press, of the farmers, and of all other classes interested in the prosperity of agriculture. The business men of the cities and towns have often taken the lead in promoting the work. Indeed, the great corporations have recognized the significance and importance of the movement, as was shown by the action of the railway Central Traffic Association in granting reduced rates to the Institutes. Well may the men of other callings approve and encourage the Institute work, as it is an earnest, intelligent, powerful movement in the interest of a more successful agriculture, and of general progress and prosperity.

THE INTEREST EXTENDING

So keen has been the appreciation of the Institutes, that in most counties where they have been held, permanent associations have been formed to continue the work inaugurated under State patronage. The interest has also outrun the movement, as the people of many other counties are impatient to have the work begun with them. Every one of the remaining forty two counties will certainly hold a farmers' Institute before the close of the next season, which will begin November 1, and continue five months.

COST OF THE INSTITUTES.

It is not easy to ascertain the exact cost of the Institutes, because the State allowance has been frequently and largely supplemented by private donations. The expenditures of the State Institute fund have not exceeded \$3,000, and private donations—including time, money, hall rent, music, etc.—can not fall much short of, if they do not exceed, \$2,000. It is, therefore, estimated that the total outlay for the fifty Institutes is not less than \$5,000. The experience gained this year will enable the committee to systematize the work more thoroughly next year, and thereby reduce expenses. Several good Institutes were held with no cash outlay beyond the \$40 allowance from the State fund. The hearty co-operation of the various county associations with each other, and with the Purdue committee on Institutes, will insure greater economy and efficiency in future work.

On motion of E. L. Furness, Professor Latta was tendered a vote of thanks for his services as Superintendent of the Institute work.

Professor Latta. I must say that I am delighted at the reception that the Marion County Society has given us.

Senator Mount, from the Committee on Resolutions, reported the following, which were adopted:

WHEREAS, It is believed that much of the great depression now existing in agriculture is due to imperfect methods and lack of economical production, with a lamentable absence of practical coöperation among farmers; therefore,

Resolved, That we have watched, with deep concern, the progress and successful termination of the season of Farmers' Institutes in our State, and that testimony coming from all parts of our great commonwealth warrant the belief that the fruitage of this work will be the elevation of the farmer to a higher plane of successful methods and progressive thought.

Resolved, That we heartily commend the untiring efforts and practical skill of our Institute committee, consisting of President Smart, Dr. Stockbridge and Prof. W. C. Latta, in formulating and developing the Institute work.

WHEREAS, Prof. W. C. Latta, as the Superintendent of the Farmers' Institute work of the State, has encountered formidable obstacles and has exhibited commendable skill with persistent effort and the utmost patience; therefore,

Resolved, That we gladly accept this opportunity of expressing our commendation and thanks for his valuable services; and

WHEREAS, Our able corps of volunteer workers, who have attended the various Institutes of the State, have kindly and generously left their homes and business without remuneration, and thrown their whole energy and ability into the work; therefore, be it,

Resolved, That we, the farmers of the Round-Up Institute, do hereby express our fullest appreciation of their services, and return our most hearty thanks for said effort. Neither can we forget that this work so freely given could not have been successful had not enterprising and intelligent coöperation existed on the part of local committees and managers.

Resolved, That we approve the act of the Legislature in the passage of the Institute law, and ask an appropriation of \$10,000 annually for the continuation of the work.

Resolved, That we demand of our next Legislature a more efficient dog law.

Resolved, That we demand a law of equitable taxation—taxing all property, but not indebtedness.

Resolved, That we indorse the Indiana Farmer and all publications seeking the advancement of agriculture.

We respectfully and earnestly request that the Secretary of State of the United States will use all honorable means to secure a prompt and full abrogation of the restrictions imposed by Germany, France and England upon our beef and pork, and we do respectfully ask of the Secretary an early investigation of the injury done to the cattle industry of the United States by the compulsory slaughter regulations now enforced in Great Britain.

Resolved, That the compensation of officials, Judicial, State and county, be so revised as to make their pay correspond to the rewards of labor.

Resolved, That we tender our thanks to the ladies for their sumptuous repast, for the excellent music given, to the committee of arrangements, to the Central Traffic Association, to the press, and to all others who have in any way contributed to the success of this Institute.

The Institute adjourned *sine die*.

COUNTIES OF INDIANA—HOW NAMED.*

Those counties bearing the names of signers of the Declaration of Independence, of Presidents and heroes of the Revolutionary war are Adams, Carroll, DeKalb, Fayette, Franklin, Greene, Hamilton, Hancock, Henry, Huntington, Jackson, Jefferson, Knox, Kosciusko, Madison, Marion, Marshall (the first Chief Justice of the United States) Monroe, Montgomery, Morgan, Pulaski (the gallant Polish prince who fell at Savannah), Putnam, Starke, Steuben, Sullivan, Warren (who died on Bunker Hill), Washington, and Wayne. Jay County was named in honor of the celebrated statesman and patriot; Jasper, in honor of the humble but country-loving Sergeant Jasper, of South Carolina, who lost his life on Fort Moultrie; Johnson, after Hon. John Johnson, one of the first judges of the Supreme Court of the State; Lagrange, after the residence of General LaFayette, in France; Lake, from its local situation on Lake Michigan; Laporte, so called from the French name of the large and beautiful prairie which it includes, Laporte meaning "the door," the broad, open entrance to the State; Lawrence, in honor of Captain James Lawrence, of the frigate Chesapeake, who was killed in battle with the British frigate Shannon, leaving as his last words, "Don't give up the ship;" Martin, so named after Major Martin, of Newport, Ky.; Miami, from the tribe of Indians that once possessed that and adjoining parts of the State; Ohio, after the river on whose borders it is situated; Orange, from the county in North Carolina in which many of the first residents had previously lived; Parke, for Benjamin Parke, the first member of Congress for the Territory, and afterward a territorial and then a district judge; Perry, in honor of the gallant Commodore Oliver Hazard Perry, who whipped the British on Lake Erie, in the war of 1812, and sent scooting down the corridors of fame the laconic dispatch, "We have met the enemy and they are ours," etc.; Pike, for Gen. Zebulon M. Pike, who fell at the capture of York, Canada, April 27, 1813; Porter, after Commodore David Porter.

Randolph is said to have been named at the request of the settlers, after the county in North Carolina from which they had emigrated, though it is said, also, that the name was given in honor of Thomas Randolph, Attorney-General of the Territory, who was killed in the battle of Tippecanoe. Other heroes of that battlefield are also honored with county names. Bartholomew is named after Lieut.-Col. Joseph Bartholomew, who was severely wounded when he was in command of a battalion of infantry; Daviess, after Joseph Hamilton Daviess, a distinguished lawyer, who was killed in the battle; Dubois, for Toussant Dubois, who had charge of the guides and spies in the Tippecanoe campaign, and was long a merchant of Vincennes; Owen, for Col. Abraham Owen, of Kentucky, who was killed while serving as a volunteer aid to Gen. Harrison; Spencer, after Captain Spier Spencer, of Harrison County, who fell in the battle; Tipton, in honor of Gen. John Tipton,

*NOTE.—Taken from "The Indiana Gazetteer, or Topographical Dictionary of the State of Indiana," published in 1849, by E. Chamberlain.

who was long a public man in Indiana, dying in 1839; Warrick, for Captain Jacob Warrick, who fell at the head of his company; White, for Col. Isaac White, of Gallatin County, Illinois, who volunteered his services as a private and fell in battle at the side of Major Davies.

Allen County receives its name from Col. John Allen, a distinguished Kentucky lawyer, who fell at the battle of the River Raisin; Boone, after Daniel Boone, whose love of the forest and whose wonderful strategy with the red men will make the story of his adventures a favorite with boys of generations yet to come; Brown, for Gen. Jacob Brown, one of the heroes of the war of 1812, Clark, for Gen. George Roger Clark, who captured Vincennes from the British; Crawford, after Col. Wm. Crawford, the land agent of Gen. Washington, who was taken prisoner by the Indians and burned at Sandusky, Ohio, in 1782; Dearborn, for Gen. Henry Dearborn, who, when the county was organized in 1802, was Secretary of War; Floyd, after Col. John Floyd, a Virginian, who had been killed by Indians on the Kentucky side of the Ohio river, opposite the county named in his honor; Fountain, for Major Fountain or Fontaine, of Boone County, Kentucky, who was killed at the head of the mounted militia in the battle on the Maumee, near Ft. Wayne, Oct. 22, 1790; Grant, in honor of Captain Samuel Grant and Moses Grant, who were killed in 1789 in a battle with the Indians near the creek since called by their name, in the northeast part of Switzerland County; Wells gets its name from Captain William H. Wells, of Ft. Wayne, who was killed by Indians, Aug. 15, 1812, near Chicago, in an attempt to escort the garrison of Fort Dearborn to Ft. Wayne; Whitley, in honor of Col. Wm. Whitley, of Lincoln County, Kentucky, who fell in the battle of the Thames.

Benton County receives its name from the statesman, Thomas H. Benton; Cass, from Lewis Cass; Blackford, in honor of Judge Isaac Blackford, long a judge of the Supreme Court of Indiana; Clay, from the great Henry Clay, the idol of the Whig party; Clinton, from DeWitt Clinton, Governor of New York and promoter of the great New York canal; Decatur, after the gallant Commodore, Stephen Decatur.

Delaware County got its designation from the Indians of that name: Elkhart, St. Joseph, Tippecanoe, Wabash and Vermillion, from the rivers of those names, and Union derived its name from the hope that it would harmonize the difficulties that existed, when it was organized (1821), in relation to the county seats in Wayne and Fayette Counties.

Harrison County was named in honor of General William Henry Harrison in 1808, three years before he whipped the Indians at Tippecanoe, and who was the first Territorial Governor of Indiana; Jennings, after Jonathan Jennings, the first Governor of the State; Noble, for Noah Noble, who was Governor from 1831 to 1837; Hendricks, organized in 1824, was named for William Hendricks, who, at that time, was Governor; Posey, for General Thomas Posey, who was appointed Governor of Indiana Territory to succeed General Harrison. Fulton is the only county in the State named in honor of an inventor, and it perpetuates the name of Robert Fulton, who gave to the world the steamboat; Vigo is named after Colonel Francis Vigo, long known in the early history of Vincennes as "the Spanish merchant," but who was a most patriotic American, though a Sardinian by birth, and

the efficient friend of General George Rogers Clark in the capture of Vincennes; Switzerland derives its name from a settlement of Swiss that came within the bounds of the present county in 1802, and began the cultivation of the grape there; Vanderburgh was named in honor of Henry Vanderburgh, who had been a Captain in the Revolution, and was a Judge of the first court ever formed in Indiana Territory; Gibson was named for General John Gibson, Secretary of the Territory from 1801 to 1816, and who repeatedly acted as Governor in the absence of Governor Harrison. He had been taken prisoner in early life by the Indians, continued among them many years, and was familiar with their language and customs. It is said that it was to him that the speech ascribed to Logan, Chief of the Mingoes, was made. Rush was named in honor of the great Philadelphia physician, Dr. Benjamin Rush; Scott County was named after General Charles Scott, a distinguished officer in the Revolution, also in the Indian wars, and who was afterwards Governor of Kentucky; another Indiana county, Shelby, was named for a Governor of Kentucky, Isaac Shelby, an officer of distinction in the Revolutionary War and in that of 1812. Howard County, organized in 1844, was first named Richardville (corrupted to Russiaville), after the Chief of Miamis of that name, but on the death of General Tilghman A. Howard, a distinguished citizen of the State, and at the time Minister to Texas, the name was changed; Ripley County was named after General E. W. Ripley, an officer in the War of 1812. The last county to be organized was Newton, which was in 1860. Probably not one person out of ten thousand in this State knows whence the name of this county comes, and yet no county in Indiana is more appropriately named. As it was taken from Jasper County, which was named for Sergeant Jasper, it was called Newton, after Sergeant Newton, a friend of the hero of Fort Moultrie.

COUNTY AND DISTRICT REPORTS.

ADAMS COUNTY.

The Adams County Fair of 1889 was the best in the history of the county, and the management is to be congratulated.

Never before were there so many entries, especially in the stock department. There were more fine stallions, a greater number of draft and general purpose horses, and brood mares and colts on exhibition than were ever seen before in the county. Some of the finest cattle, hogs and sheep that the county affords were entered for premiums. The agricultural display was complete, while that of fancy work, dry goods, agricultural machinery, carriages, wagons, and hundreds of different articles was equal to that shown at any county fair in Eastern Indiana.

Everybody complimented the displays very highly, and were pleased at the interest taken in the fair by the people.

Besides the regular exhibits there was much to amuse and entertain the visitor.

During the afternoon of each day the principal attraction was the races, which drew large crowds of people. Some of the fleetest horses in the country competed for the prizes, and the contests were indeed exciting.

Not a serious accident occurred to mar the pleasure of the occasion, which can not be said of every fair.

The attendance each day was all that could be desired. The people for miles around came to the fair, and went away satisfied with what they had seen.

Everything points to the fact that the people of the county are becoming interested in agricultural displays and will give them their hearty support. Next year the fair will be even better, this is assured. What is needed now are better buildings, which doubtless will be provided by that time. Let the people take hold and they will be erected.

It was our intention to mention each display but lack of space forbids.

BOONE COUNTY.

Our thirty-second annual fair was held at Lebanon, August 19 to 23, inclusive, under very favorable circumstances. Such was the interest manifested by our farmers and stock-growers that we can truthfully say that our exhibit was far in excess of former years.

Our display of horses, mules, cattle, hogs and sheep showed a vast improvement over former years.

In our Floral Hall we had a large and fine display of textile fabrics, which speaks well for the ladies.

Our farmers have learned the great fact that theirs are the Herculean shoulders upon which the world rests, and we know no spot so well adapted for the farmer to carry these burdens with ease and pleasure as upon the rich and productive lands of Boone County, with 325 miles of free gravel roads, whereby he can transport his products to the various points with ease. Just beneath the surface we have another great system of transportation which, if stretched out in one continuous line, would reach three times around the earth. Thus by the use of the drain tile the domicile of the old bull frog has been given to the use of the agriculturist. In short, we know of no occupation so honorable, so pleasant, and so profitable as that of the agriculturist and stock-raiser of Boone County.

Financially our fair was a success. Receipts were larger than ever before, and the society is out of debt, with \$600 dollars in the treasury.

A word personal to our society and I have done. We are out of debt, have good grounds and buildings, and money in our treasury, which surely speaks well for the present management. Let us hope for the future, and trust that the coming year will bring us still greater success.

BLACKFORD COUNTY.

The first annual fair of the Montpelier Tri-County Fair was held on the new grounds of the association August 13 to 16. The exhibition was by far the finest ever seen in this locality, and one well calculated to stimulate the efforts of the

managers for 1890. The new grounds adjoining the town are easy of access by numerous streets. The improvements are all good. Roomy, substantial buildings, well arranged for the purposes for which used, elicited many favorable comments from our patrons by reason of the beautiful location, large exhibition and general arrangement of our fair.

The surface of the county is generally rolling and of good, rich soil. We have now in our county forty oil and gas wells.

CARROLL COUNTY.

The county fair for 1889, our eighth annual exhibition, was held September 25 to 28—same week as State Fair—on the association grounds at Camden. While in some particulars the display was not quite equal to that of the previous year, yet it was found necessary to build additional stalls for the accommodation of horses, of which the display was the finest we have ever had; and, considering the fact that we pay premiums only on stock owned in Carroll County, and have no speed ring, was most creditable, and gives evidence that our farmers and stockmen appreciate the efforts of the Association, in that line at least, for there has been a vast improvement in the stock of horses in this county within the past five or six years. The same is also true as regards cattle and hogs.

As has ever been the custom of the association, all premiums were paid in full on the last day of the fair, notwithstanding the fact that we commenced with a debt of nearly \$700, which was reduced to less than \$200, while over \$100 was also paid out for additional and permanent improvement; so that the prospects for next year are exceedingly bright, as but little, if any, improvements will be necessary before the holding of our next fair.

Carroll is almost strictly an agricultural county. It has no large commercial or manufacturing town. Yet, aside from Delphi, the county seat (a town of nearly 3,000 inhabitants), it has a dozen thriving villages or trade centers of less than 1,000 population each. It was originally a timbered country, but the dense forests where, fifty years ago, the Indians and wild beasts were wont to roam at will have mostly disappeared, and in their stead we now find well-cultivated and nicely improved farms, with school-houses and churches within easy access of all.

There are about 125 miles of free gravel road already completed in the county, and three railroads pass through it, viz.: The Wabash, Vandalia and Monon. The soil and climate are well adapted to the raising of all the small grains, as well as most of the root and vegetable crops. Fruit also does well. The past season, however, was not a favorable one. Wheat only averaged about three-fourths of a crop. An unusually early frost seriously injured the corn crop. Oats yielded well, but was badly damaged by an insect. Of timothy hay there was an abundant crop. Clover did not do near so well as usual. Potatoes yielded abundantly, and were of excellent quality. Cholera cut short the hog crop.

The present winter has so far been an unusually mild one, and the growing wheat looks fine. Farmers have been able to plow up to the present time—New Year's Day.

DECATUR COUNTY.

The Decatur County Agricultural Society held its annual fair the last week in August. Our grounds are convenient to Greensburg, and well adapted to the purpose, having ample shade and water.

Entries were satisfactory except in a few departments.

The old, much-abused family ticket was laid aside, and single admission tickets, with coupon attachment, five of which presented at the office entitled the holder to an additional ticket, were sold. The change was satisfactory to the management, although some abuse of the coupon privilege was noted. The society is now in favor of a straight single admission ticket, at one price to all.

The receipts paid the premiums in full, but unfortunately the society is carrying a heavy debt, incurred in the purchase of additional grounds and making much needed improvements. But we now have good buildings for displays.

Decatur County has a varied soil, and also varied interests. The western and south-western portion of the county is a black sandy loam, with much bottom lands in the central, northern and north-eastern, a rolling sandy-clay, rich and productive. The south-eastern border, once a wet, flat country, now, by ample drainage, is one of our best wheat producing sections.

The staples, wheat, corn, oats, etc., are raised in crops equal to an average of any part of the State.

Indianapolis and Cincinnati are our principal markets.

Grasses, blue, timothy and clover, are all grown very successfully. We graze extensively, many cattle being purchased in the county for sale in foreign markets.

No better stone county is found in the State. Limestone, hard, soft or medium, is scattered in abundance over different sections of the county. Flag-stone of any thickness, building stone in size and thickness suitable for any structure, and rubble stone of any variety can be obtained within the county. Decatur stone can be found in nearly every building of prominence in Indiana, as well as in adjoining States. It is easily quarried, by reason of its seam formation, and is accessible by railroads. Many fine quarries are yet undeveloped.

The county seat, Greensburg, is centrally located. Has a system of water-works, supplied from wells driven into a bed of gravel.

Lines of railroad traverse the county in four directions, and a new road is nearing completion through the county, so that but few of our citizens will be over five miles from a railroad.

Natural gas is found in the central and western half of the county. Though not gushers, they yield an abundance of fuel and light for many families to the well, and many farmers are using it for fuel and light.

Many streams of water traverse the county, and three, Big Flat Rock, Clifty and Sandy creeks, are fine bass streams, which, with some protection and stocking, would furnish an abundance of food fish.

The people are prosperous and contented, as will be evidenced by the tasty farms and elegant country homes.

The only thing lacking to make our fair an annual success, is a more thorough appreciation, by the people of the county, of their County Agricultural Society.

DELAWARE COUNTY.

This county, for several years past, has enjoyed the reputation of giving one among the best county fairs in the State, and the fair of 1889 will detract none from, but rather add to her former prestige. The society gave its 37th annual fair on grounds adjoining the city of Muncie, August 20, to 24. The fair was a most gratifying success in all its details. There was a good showing in all the departments. The entries were large and the quality of exhibits well up to the usual standard of such exhibits, while in many cases they were of a very superior character. Our attendance was large, far exceeding all former years and the receipts were correspondingly increased. Premiums were all paid in full and money left to reward the stockholders for their labors. We were unfortunate in the loss of our Floral and Horticultural Halls by fire, which caused us considerable inconvenience. A temporary building, however, supplied the loss and the exhibit was worthy of especial mention.

Our county suffered along with other counties of the State in bad crops, the quantity and quality being considerably below the usual standard. Hay and oats being the only exceptions. The outlook for wheat is not good at this time.

ELKHART COUNTY.

The Elkhart County society held their fair from September 24, to 27, inclusive, and we had a bad week; it commenced raining on the second day and continued two days clearing up about 10 o'clock Thursday morning, we had a large attendance on that day, but had a very slim attendance the fore part of the week. Our exhibits in horses, cattle and hogs were fair, what stock we had on exhibition was fine, and the fair throughout was pronounced good. If the weather had been in our favor the fair would have been a success financially. We held our annual meeting on the 28, inst. and elected a new set of officers.

FULTON COUNTY.

The nineteenth annual fair of our society was held at Rochester, Ind., September 4 to 7, inclusive. The exhibition was good, except farm products, which, owing to the fair being held very early, and the season about two weeks later than usual, the exhibits in this class were very meager. The show of Live Stock continues to increase from year to year. Thirteen stallions were shown in the sweepstakes class, for a diploma only. The yield of wheat in this county was above the average, but the quality was not first class, being below the standard in weight. Corn was damaged some by too much rain, just at a time when the cultivator ought to have been at work. This brings to the mind of farmers the further needs of tile drainage, and at this writing many are engaged in this useful improvement. The oats crop was never better, with an abundance of hay.

GIBSON COUNTY.

Our county fair, it being the thirty-fifth annual, was held at Princeton, September 9 to 14, inclusive. This was the best county fair ever held in Southern Indiana, and well does Gibson deserve the well-earned name of the "banner county." This is what you might term a systematic fair, our attendance is always very large, and money always in the treasury, and why? For the reason that our fair is always conducted honestly, all premiums paid in full, and is a strictly moral fair, no gambling or liquor privileges being sold on the grounds. This alone will make a county fair. Our county is underlaid with the best of coal, and already several mines are in working order. Our agricultural interests are on the increase. Wheat this year averaged 30, and corn 70 bushels per acre, our stock men are turning their attention to fine stock exclusively, and the "scrub" is a thing of the past.

GREENE COUNTY.

The annual fair of the Greene County Agricultural Society was held the first week in September, and was a success as an exhibition. The weather proved very unfavorable, and the attendance was greatly diminished by the threatening aspect of the weather and frequent rains. In order to pay premiums in full the balance due on forty shares of stock was collected. Numerous improvements were added during the year just closed. The display of stock has never been equaled at any previous fair in the county. The vegetable, fruit, grain and other products were not up to the average, as the season was too early for their maturity in some instances. The agricultural interests of the western part of this county have been given a new impetus within the last few years by bringing into cultivation thousands of acres of wet lands that were formerly considered worthless. Public and private enterprise, by means of ditching and tiling, has brought into cultivation vast tracts of land that were formerly a fruitful source of malaria, producing chills and fever during a portion of the year. The shrinkage in values in some classes of farm stock, notably cattle, has had a tendency to decrease the interest in selecting better breeds. Indeed, it seems to be an open question as to the expediency of Indiana farmers trying to compete with Western cattle barons unless other markets are opened up for our meat products. The improvement in horses in this county has been very marked within the last few years. The heavy draft, the general purpose and the roadster are bred by those who may fancy each special class. To rear these classes, each for a specific purpose, seems to be the desire of the intelligent and progressive farmer. The increase in wealth of the western half of the county within the last few years has to a great extent been brought about by the development of the bituminous coal fields in this section of the country. Farmers have had better markets, labor demanded better prices, and money has been more plentiful than at other points that had not these advantages. The resources of the county are fast attracting the attention of the people in other localities, and emigration is becoming greater each year.

HANCOCK COUNTY.

The Hancock County Agricultural Association held one of its most successful fairs this year, and in many respects it was the best fair ever held in the county. All the departments were well filled, especially the Agricultural Department. In this department the society offered to the township in the county making the largest and best display of agricultural and vegetable products a premium of \$15, and to the second best \$10, which resulted in filling the Agricultural Hall as it never was filled before. Heretofore we have had trouble in filling this hall, because of the fact that we held our fair in August, but this year every township was represented, with the above result.

The entries in every department were full, and nearly every premium offered was taken. We have every reason to be proud of our association.

In former reports the character of the soil of this county, its natural gas, crops, etc., have been fully described. Since our last report all the gravel roads in the county have been made free, and the people are now interested in securing a railroad running northwest and southeast through the county. Two townships have already voted \$65,000 to secure the road. If this road is built we will have five railroads running through the county. The possibilities are great for Hancock County.

HARRISON COUNTY.

The thirtieth annual fair of the Harrison County Agricultural Society which closed September 13, 1889, was a grand success in every department. The number of entries nearly doubled that of any previous year. The premiums were paid in full, leaving a balance of over \$900 in the treasury. Notwithstanding the extensive additions in the way of stall-room within the past few years, the entries in the stock line were so numerous that our facilities in that direction were wholly inadequate, and new stalls and pens had to be built, and stables secured adjoining the grounds for the accommodation of exhibitors. Floral Hall was filled to its uttermost with needle-work, fine art, etc. The display in Agricultural Hall was in keeping with all the other departments of the fair. Everything considered our last fair indicated that the development of our county in the past year has been more general and substantial than in any previous year of its history; to this fact we attribute the immense success of our last fair.

In addition to the agricultural growth of our county we are having a boom in the gas business. Sixteen gas wells are now in operation, and more to follow.

Within the past year the Louisville, New Albany & Corydon R. R. has been extended to the valuable stone quarries in our county, and large amounts of stone is being shipped to other places.

HENRY COUNTY.

Henry County has, for thirty-eight years, consecutively, invited to her annual fair, the progressive farmer, the careful stock raiser, the expert mechanic, the industrious lady, and the skilled artisan.

They have responded with their respective exhibits, and have been entertained and benefited. The attendance and the prudent recreation occasioned by these holiday weeks have given to this county an enviable position on the map of productive localities, and one in the column of desirable statistics, which but few excel. Her stock growers are gathering now the desirable premiums of the country, and are shipping breeding animals to many of the best stock-producing localities. Partially within the gas belt, the towns of the county are experiencing the impetus this great luxury affords.

The productiveness of her soil is augmented by the most complete system of deep-tile drainage, an outlet for which has been secured by the lowering of all her principal streams, until scarcely a locality exists within her borders where one can not till assuringly to the very water's edge.

The last fair at New Castle proved a climax of the county's continued endeavor. A whole week of beautiful weather, an increased attendance, finer and greater exhibits, and manifestly a deeper interest in the various pursuits they represented, were observations most frequently expressed.

HUNTINGTON COUNTY.

The time having arrived for another report, we have to say that our Third Annual Fair was one of the best, in point of results, that has ever been held in this part of the State.

The attendance was large, the exhibits larger; in fact, our large grounds were hardly adequate to accommodate the vast throng.

Huntington County is thoroughly alive to her own interests, and not only supports one successful fair, but two, and I doubt if there is another county in the State that can truthfully make the same assertion.

The past year we constructed fifty new box stalls, which now gives us about 950 stalls of all kinds, and then we did not have room enough, but had to quarter some of the "flyers" in livery stables during the fair. It is now our intention to build 100 new stalls the coming season for the accommodation of horses and cattle, and hope then we will be through.

The outlook for bountiful crops the coming year is very flattering. Wheat is looking better than for several years, the open winter being just what was needed to bring it on, as a large amount that was sown in the fall was lying in the ground in a dormant state until the rains came to soften the ground.

The exhibit of cattle was much larger this year than in any former one, which shows very clearly that our farmers are taking more interest in the improvement of their stock, realizing that it is just as easy and cheap to feed good stock as the ordinary "dung hill"

JACKSON COUNTY.

Our fair, the fourteenth annual, was held on the grounds of the society, near Brownstown, September 17 to 24, inclusive. The weather was all that could be desired for a good fair, but the gate receipts did not come up to the expectations of those having the management, and consequently they could not pay the premiums in full, as they should like to have done. There is a lack of enthusiasm on the part of our citizens in regard to fairs, else we could have equally as good a fair as the average county of the State.

The Condition of Agriculture.—Jackson County has been highly favored in having excellent crops the past season. The wheat crop was the largest, and quality superior to that of previous years, many of the river bottom farms producing over forty bushels per acre.

The crop of corn was good, while not so great, probably, as in former years, and was secured in excellent shape. Oats, flax and clover seed produced well, and good prices have been obtained for the surplus, although the open winter and extremely bad roads have had the effect to leave large quantities of grain in the hands of the farmers. Our farmers are taking a greater interest in the improvement of their stock than they formerly did, and the county possesses many fine herds of cattle. There has been a marked improvement in swine in the last few years. Our farmers are learning that it profits them most to get good breeds and feed their surplus corn instead of marketing it all.

JAY COUNTY.

The year 1889 has been the most successful one in the history of the Jay County society. The eighteenth annual fair was held October 1 to 4, inclusive, on the society's beautiful grounds near Portland, and surpassed all former exhibitions in display, attendance and receipts.

In the horse department nearly all the improved breeds were represented, and by far surpassed any previous display.

The show of cattle was good, comprising Holsteins, Shorthorns, Herefords, Jerseys and Alderneys, the species of each breed on exhibition being animals of merit.

The display of sheep was large and fully up to former years, the fine, long and middle wools being all well represented.

The exhibition of swine excelled all previous years. In the large breeds, the Poland China and Chester Whites led in numbers; in small breeds, the Suffolks.

The poultry show was large, and, as usual hotly contested, and was one of the centers of attraction during the fair, nearly all the standard varieties being on exhibition.

While on account of the dry weather many of the agricultural products were not as large as in other years, yet the entries were all well filled with meritorious specimens

Of machinery, implements, tools and vehicles we had an abundance of the best.

In number of entries, quality and display, the culinary preparations and needle and fancy work of the ladies, excelled all the other departments, and was much in advance of previous years. To have examined the articles in these departments alone would have taken more time than was allotted to the fair.

Our speed department was more satisfactory than ever before, the heats being hotly contested, and not "set up" affairs, as has often been the case. While the attendance was much larger than ever before, yet the order was excellent.

For six years the society has rigidly excluded from the grounds all games of chance of every character, including wheels, shooting galleries, cane racks, striking machines, etc.

We also prohibit the sale of goods where prizes are given. This keeps away from the fair a large class of disorderly persons who are hard to control and brings in their stead a class of order-loving citizens who formerly staid away, and what at first was most surprising to us is the fact that each year since adopting this course our receipts from privileges have largely increased. Nothing could now induce us to change this rule.

It is not the aim of our society to pay dividends, but to expend all our earnings in paying premiums in full and the balance in improvements on the grounds. At the close of this year we have a surplus of nearly three thousand dollars which will be expended in new stalls and buildings previous to our next fair. All of our improvements are of a permanent character, and if our past success continues in a few years we will have one of the best improved grounds in the State.

The people of our county now look forward to our fair as the great annual gathering or reunion which they must all attend, and its influence as an educator is remarked by all.

Our farmers are wide awake, and alive to improvement, and are well up with the spirit of the times.

We now have over two hundred miles of free gravel roads, with more to be added each year.

All parts of the county needing it, are now crossed by large ditches, making excellent outlets for the immense amount of under drains that have been, and are still being made. The Loblolly, a large marsh, in the northern part of the county, is now being opened up; a steam dredge-boat having been at work several months in opening an outlet for its waters. It will soon be finished, adding a large area of excellent land to what has heretofore been one of the best agricultural counties in Indiana.

In addition to our agricultural resources, the fact that we have an abundance of natural gas is rapidly bringing Jay County to the front rank for manufacturing, making a home market for our farmers, who, as a class, enjoy a full share of the prosperity of the county, and it is now a rare thing for one to sell his farm and move west.

We enter upon the year 1890, with increased hopes, believing that most of them will be realized.

JEFFERSON COUNTY.

Our association held its thirteenth annual fair on grounds near Wirt Station, September 3 to 4.

This meeting was held under very adverse circumstances, as it rained almost the entire three days, and what time it did not rain was very threatening weather, which resulted in almost making the meeting a failure, although the show and attendance was much better than was expected, considering the bad weather.

During the season the association made considerable improvements in the way of stalls and buildings, also prepared a good half-mile track and spared no pains to make the meeting a success. Had either one of the last two days been fair weather we would have had the best fair ever held on our grounds, both in display and attendance; as it was we paid all our premiums, in full, and a good portion of the cost of the improvements.

This county has been blessed with an abundant crop, this season, of all kinds of farm products, but the present low prices do not give the farmer a just remuneration for his labor.

The fruit crop has been one of the largest ever harvested in the county, with a good market at fair prices.

Judging from the number of fruit trees being set this season, this county is destined to be one of the largest fruit producing counties in the State in the near future.

Stock raising is not lagging in interest. The farmers are making a specialty of improving their stock in all classes.

There is a large acreage of wheat sown this fall, and, although a great deal was sown late, it is looking well, the season being very favorable toward giving it a good growth before cold weather sets in. Commercial fertilizer is universally used on our wheat crop, and has proved to be a paying investment in almost every instance.

Our manufacturing interest is keeping pace with all other interests, and is gradually on the increase.

With good prospects for another railroad soon, there is a general upward tendency all along the line.

JENNINGS COUNTY.

The ninth annual fair of the Jennings County Agricultural Association was held on the grounds owned by the association, from August 6 to 10. The exhibits were very numerous, especially in the horse department. Other live stock exhibits were not quite up to the usual number of other years. The stock exhibited was of the very best class. The miscellaneous and floral departments were full to overflowing; the ladies of our county taking much interest therein. The entries were more than for years before. Our premiums are always paid in full on the afternoon of the last day of the fair. The association has been fairly prosperous. One six per cent. dividend only has been declared. The profits of other years being used in the way of improvements on the grounds. Our fairs are the first of

the season, in this part of the State at least, and a little too early for a good showing of agricultural, horticultural and garden products, but we have advantage over later fairs in the quality and number of live stock shown.

Our county is largely agricultural, and considerable attention is given by our farmers to the breeding of speed, general purpose, and draft horses, Shorthorn, Holstein and Jersey cattle, and Poland China hogs. The sheep industry is small, but we have some good flocks. Tile drainage is growing with the farmers, and the extent of lands thus improved increases largely each year. Large quantities of commercial and other fertilizers are used.

The season was too dry last spring for oats and the crop was a short one. Wheat was better than for a number of years before, and the yield ranged from twenty to forty-two bushels. Jennings County wheat is of hard kernel and preferable for milling over that from adjoining counties. Corn was an average crop. Although our orchards are sadly neglected, the fruit crop was immense, and a considerable source of revenue. With proper cultivation and other care of orchards, the fruit growing capacity of Jennings might equal that of the best county in the State. Small fruits were plenty.

The fairs of the association have encouraged stock breeding and raising, and our own farmers can compete with any in the State.

JOHNSON COUNTY.

During the spring and summer of 1888, many of our citizens interested in the agricultural developments of the county went to work under section 5802 of the Revised Statutes of Indiana to procure a majority of the legal voters of the county, petitioning the Board of County Commissioners to appropriate sufficient funds, not to exceed \$5,000 and to purchase suitable grounds for use for agricultural, horticultural and other purposes. Success crowned their efforts.

The commissioners purchased the grounds known as the "Old Fair Grounds," consisting of about thirty acres adjoining the corporation of the city of Franklin on the west.

On December 8, 1888, a meeting of the citizens of the county was held and at this and subsequent meetings an association was formed to be known as the "Johnson County Agricultural, Horticultural and Park Association," adopting a suitable constitution and by-laws for the government of the organization.

The capital stock of the association was fixed at \$5,000, divided into five hundred shares of \$10 each.

In a short time enough stock was subscribed to warrant the success of the enterprise.

The construction of suitable buildings, stalls, etc., for exhibits, was at once commenced, and in a short time the grounds began to take on a "fairish air." The speed track, a half mile regulation, is conceded to be, on account of the lay of the ground and soil, one of the best half mile tracks in the State.

Everybody was apparently interested in making the first annual fair of the new association a success.

September 17 to 21, 1889, was fixed for holding the fair. The time rolled round, the day came and the people of Johnson County realized for once the pleasure and profit of a successful county fair. In all departments over 3,000 entries were placed on the Secretary's books. The exhibit in the horse department was exceptionally fine, there being 212 entries in this department. Visitors from abroad, competent judges, were heard frequently to remark that the horse exhibit was one of the best ever seen at a county fair. Johnson County is evidently coming to the front in the improvement and development of the best breeds of horses.

The stock exhibits in the other departments were most excellent, including the poultry, except in sheep. Johnson County can not boast much of her sheep raising and never will until the dog is exterminated or in some manner curtail his depredations against sheep. When it comes to paying out several hundred dollars per annum by township trustees on account of damages to sheep by dogs, it is certainly not very encouraging to farmers to try to raise sheep.

The exhibits in the agricultural and horticultural departments were certainly very attractive and gratifying, both as to number of entries, as well as the excellency of the products. The corn show was hard to beat, as evidenced in the fact that Johnson County usually gets her share of awards on corn at the State Fair. The fruits and vegetables were no small part of the grand aggregation of the specimens of what the people of the county can show from their farms, gardens and orchards.

The Women's Department, which was under the superintendency of four ladies appointed by the board, was one of the most attractive and interesting features of the fair. The exhibition in the Floral and Art Hall was simply grand. The hall was filled to its utmost capacity with needle work, fine art, etc., which was first class in every respect. This is an evidence of the fact that the ladies are a powerful influence in strengthening and assisting the managers of a fair to make it pleasant and profitable, and insure its success. Take it all in all, the first fair held under the present organization, was a decided success. Premiums were paid in full, but the association is left in debt about \$1,400, with about \$550 of unpaid subscriptions of stock. An effort will be made at the annual meeting in December, to raise enough more on subscriptions of stock to place the institution out of debt.

Now, a word in regard to some of the drawbacks to county fairs. The principal one being the imposition practiced by "professionals." Something must be done sooner or later by the management of fairs to shut out this class of leeches. This can not, or does not occur to any great extent except in the Ladies' and Art Departments. When it comes to people traveling about from fair to fair, with a selected stock of samples, not of their own handiwork, to make exhibits simply for what little money there is in it, as against the honest competitors who make their own goods, and are willing to comply with the rules as laid down in the premium list, it is unjust, and some means should be devised to shut them out.

Premiums lists, in most instances, contain rules like this: "That all articles entered for exhibition must be made by exhibitor, fruit to be grown by exhibitor," etc. Yet, when fair day comes but little attention is paid to them. Many complaints were made by our home exhibitors at this sort of thing, and it is evident

that unless it can be prohibited, at least to some extent, it works an injury to the success of fairs.

No species of intoxicating liquors were allowed sold on the grounds, nor were any gambling or games of chance tolerated.

KNOX COUNTY.

The nineteenth annual fair of our agricultural and mechanical society was held at the city of Vincennes from September 30 to October 5, inclusive. The week opened with rain and disagreeable weather, but notwithstanding this fact the entries were made rapidly and were unprecedented in number and excellence. The weather cleared up in ample time, leaving us the most delightful week for the exhibition we have ever had.

The fair this year was the most successful we have ever had. The number of entries was larger, the attendance greater, the exhibit more varied and abundant, and the receipts more satisfactory than ever before. The weather, the wonderful crops and the plentifulness of money, all conspired to bring about this happy result. The association paid off all of its debts and made a number of permanent improvements out of this year's surplus.

The Knox County fair has always been a progressive one, but this year's exposition has given it a new impetus and renewed its interest with all the people of this section of country. The horse, cattle, sheep, hog and poultry departments were all full to overflowing, and more particularly the cattle and poultry departments.

The Floral Hall was, possibly, a little short of former years, but there were some special features—educational, for instance—that were more remarkable than heretofore. The display of implements was superior in every respect. The speed ring was more attractive than ever. The wagon and carriage men made a splendid display. The wheat and corn crops were never before anything like equaled, the hay and potato crops were an average, apples and peaches an average.

LAKE COUNTY.

The thirty-first annual fair of our agricultural society was held on the county fair grounds, at Crown Point, from October 1 to 4. It was a decided success in all respects, and the perfect weather contributed largely to this result.

The display of horses, usually very good, was fully up to the average. The display of cattle was much better than for some years. Only a few exhibits of hogs, sheep and poultry. The Floral Hall was crowded with fancy work and fine arts, much credit for which is due the ladies. A large amount of space was taken by the educational exhibit, for which 126 entries were made. By request of the Teachers' Association diplomas will be given in this department next year, better results being expected than if small money prizes were offered. Since the close of the fair considerable improvements have been made on the grounds and race track, the surplus enabling us to do this somewhat neglected work.

Crops generally for the year were not up to the average. So much wet weather did great damage. Cholera has made much havoc among the hogs.

Prices are very low, and in cases where the farmer is compelled to sell he has little to show for his work.

The manufacturing towns of Hammond, East Chicago and Whiting furnish employment to a large number of our inhabitants, and together with the adjacent city of Chicago, furnish a good market almost at the door.

Taxes are low and our county is free from debt.

LAPORTE COUNTY.

The Laporte County Agricultural Association held its thirty-eighth annual fair on the fair grounds near the city of Laporte, the first week of September, being one month earlier than our regular time. The experiment of such a radical change of time for our annual exhibition could hardly be counted as a success, as at that time the farmers of the county were exceedingly busy seeding, and many of them could not take the time to attend, and again so many of the products of the farm and garden had not matured, and the time following the heated term so closely much of the live stock of the county was in no condition to be placed on exhibition, and again many of the ladies were unable to prepare or finish their needle work or articles of fine arts, therefore the displays or exhibits in several of the departments were not up to the average, nor was the attendance, while the exhibit of hogs and sheep was much better than it had been for years. Our premiums, as usual, were paid in full, leaving a small balance in our treasury.

The condition of agriculture is as good, or better than it has been for years; all the crops the past year have been better than usual, and the generous yield in a great measure counterbalances for the low prices of many of the products of the farm; and while the prices of beef cattle, pork and all kinds of grade stock has been low, the demand for thoroughbred and pedigreed stock has been so great that larger importations than usual have been made, and our breeders and importers have been taxed to their utmost to supply the demand for thoroughbred stock. Repeated rainfalls and the excessive prolonged dampness have left country roadways in a bad condition, thereby retarding in a measure the marketing of grain and other products.

The prospect for wheat for the next year is exceedingly promising, and the mild condition of the weather has been beneficial to stock of all kinds, it being in a much better condition than usual at this season of the year taking into consideration the amount of feed required, therefore our farmers, notwithstanding their imaginary drawbacks, are in a better financial condition than ever known in the history of the county; foreclosures of mortgages on the farms of this county is of such an unusual occurrence that the *sheriff* of the county and the *members of the bar* are compelled to turn their attention to *other* matters, in order to "keep up with the procession" of enterprising farmers and manufacturers. Our prosperity is not confined to the country, but the manufacturers and tradesmen are alike prosperous. The opening and flattering developement of the summer resorts on Pine and

Stone Lakes near Laporte, the stocking of these lakes with the choicest fish from the government fisheries has awakened a wonderful interest, and is attracting hundreds of persons to their shores to spend summer vacations. During the past year there was two successful Farmers' Institutes held at Laporte under the auspices of our association, which were of great interest and very beneficial to all that had the pleasure of attending the interesting meetings; efforts are being made to hold these Institutes frequently, and to our notion, the act of the last legislature, relating to Farmers' Institutes, was one of the most beneficial acts, so far as the relation of agriculture is concerned, and it is to be hoped that the appropriation will not only be continued, but increased.

MARION COUNTY.

The Marion County society has held its meetings regularly the second Saturday in each month during the past year. Its motto is "Progress and scientific research in all future improvements."

The society has steadily improved in interest, membership and finance. We have had many excellent papers on different subjects, and the discussions which followed the papers were entered into with interest to all present.

Upon examination of different reports throughout the county we deem the following a fair statement: Wheat below an average in quality and quantity. Oats inferior, grading about No. 3, but about an average yield. Corn short, and, as far as we have been able to ascertain, the quality is poor; will grade about No. 3. Potato crop about an average, but badly damaged in this section by the grub worm or some other insect that worked upon the potato. Hay up to the average. Garden products were quite good. All standard fruits, an average crop, but apples were rather inferior in quality in our section. Small fruits were fully up to the standard in quality and quantity, excepting raspberries and grapes; about one-half a crop of each.

Our society is in good financial condition. We have been able to hold our annual fairs as follows: Culinary, strawberry, raspberry, live stock and vegetable, upon which there were premiums to the amount of \$250 paid in full, and leaving a nice little balance in the treasury to begin the new year with.

Reports, discussion and papers were presented on the following topics during the past year: Farm Crops, ten; Small Fruits, ten; Live Stock, six; Orchards, five; Gardens, eight; Insecticide, four; Drainage, three; Potato, ten; Marketing, three; Domestic Industry, two; Citreous Fruits, two; Agriculture, two; Arbor Day, one; Temperance, two; Farmers' Institutes, three; Fertilizers, two; Etymology, two; Education two; Meadows and Grasses, one; Corn Fodder and Silage, two; Dairying, two; Farm Economy, two; Public Schools, one. And in conclusion will say much valuable and useful information has been obtained from the foregoing subjects.

MADISON COUNTY.

The Twenty-second Annual Fair of our Agricultural Association was held on its grounds within the city limits of Anderson. The fair proved to be a little above the average for our county. All departments were represented; the domestic skill, or culinary, was but moderate. Our total receipts were a little above those of late years. The display of corn and wheat was light, not being very seasonable for either. Of vegetables there was a fair showing. The show of horses in all classes was considered very good; of cattle, sheep and hogs, light. Corn is selling now at 30 cents; hay, \$10 per ton; potatoes 60 cents per bushel; apples, quite scarce, from 80 cents to \$1.40 per bushel. On a whole, real estate is firm, having advanced within the last three years at least 20 per cent., and around our city fully 80 per cent. Our county has increased 6,000 in population in the last three years, due mainly or altogether to the natural gas now in use.

The city of Anderson, in two years, has secured some fifteen to eighteen large factories, with capital amounting in the aggregate to \$600,000.

Nearly all of our country towns in the county boast of wonderful growths. Health throughout the county considered very good. Wheat looks well at this time.

MONTGOMERY COUNTY.

The Tenth Annual Fair of the Montgomery County Agricultural Society was held September 9 to 13. Our best friend (the weather) was with us again, and in every respect the fair of 1889 was second to none preceding.

The exhibit in all departments was extremely large, fully equal to all former years, but in the Live Stock Department it was exceptionally large, necessitating the building of many extra stalls and pens. The attendance was largely in excess of former years, and, taking it all in all, was the grandest fair ever held on the grounds.

It has been a very noticeable, as well as gratifying fact, that in all the ten weeks of fairs held during the last ten years, not one single rainy day has been experienced.

The Association has reaped a handsome surplus from each fair, and to day the stock is absolutely worth 200 cents on the dollar. The magnificent ground owned by the Association lying inside the corporate limits of the city, not only renders it valuable, but gives visitors an opportunity to visit the fair cheaply. This item alone gives the Association much greater gate receipts than would be obtained was the ground situated a greater distance from the city.

Of the ground, its arrangement, improvements, etc., nothing need be said. Everybody knows it is the best in the State.

The crops in Montgomery County in 1889 were well up in the average with other counties in the State. In some parts the corn was exceedingly good. A system of drainage has been engaged in to such an extent that the county has no waste land, and the major part of it is very productive.

MONROE COUNTY.

Our agricultural society held its fifth annual fair September 16 to 20. As usual, we struck a rainy season. It rained the first two days and was cold and disagreeable the balance of the week. Still we had as good a fair (as far as the show was concerned) as has ever been held in the county. It seems that we are not a fair-going people, which makes our gate receipts small, and our fairs are not a success financially. After paying all expenses and some indebtedness carried over from last year we were compelled to pro rate our premiums one-half.

We had a good show of horses, but there were not many cattle exhibited. The other departments were well represented, especially the ladies' and art departments, which were better than ever before, which goes to show that the ladies are taking quite an interest in our fair.

Monroe is fast improving as a stock and grain growing county. There has also been quite an interest taken in horticulture within the last few years.

We can boast of as fine stone as there is in the State, and there is a never ending supply of it. There has been several large quarries opened within the last year. What we need most is an east and west railroad and a few more enterprising farmers.

NOBLE COUNTY.

The Noble County Agricultural Society held its thirty-fourth annual fair on new grounds adjacent to the town of Ligonier, October 8 to 11, inclusive. The fair was the best ever held by the society, and on Thursday we had the largest attendance and gate receipts, on a single day, we ever had in the history of the society.

Our premium list was very large, and the entries quite full in all departments.

The vicinity of Ligonier is justly famous for its fine horses, and a better display was never seen at any fair, consisting of all the standard draft horses, roadsters, and standard bred trotting horses. Competition was sharp and spirited, and displayed great interest among the raisers and competitors in the several classes. The entries in the speed classes consisted of excellent horses, and the liberal prizes offered were eagerly competed for on our half-mile track, said to be the only strictly regulation track in the State.

The show of cattle was good, there being several full herds each of Shorthorns, Jerseys, Herefords, Holsteins, and Polled Angus, on exhibition, among which were some of the finest individual specimens that can be found anywhere.

The hog and sheep departments were well represented by as fine a lot of the several standard breeds of porkers and fine wool as can be found in any part of the State.

The poultry show was far in advance of any previous year.

The display in floral hall was a fine exhibition of the skill, intelligence and taste of our ladies, which, together with the fine art department, commanded the admiration of the people, who were highly pleased with the large display of domestic skill and fine paintings.

The educational exhibition, made by the Ligonier High School, was a new feature, interesting and highly creditable to teachers and pupils—a feature that should be encouraged in the future.

The society made several fine improvements on their grounds this year, among which is the extension of the mains of the Ligonier water works, which will supply plenty of good water to all parts for the people and stock, a convenience indispensable on a well regulated fair grounds.

The officers and stockholders are encouraged by the result of their efforts in the past, and especially with their success this year. Feeling that they have done much to encourage and develop the best interest of the farmers in the past, they are determined to go on in the future with increased energy, striving to make the fairs of the Noble County Agricultural Society equal to the best in the State, in its exhibitions, as well as a means conducive to the development of the best interests, prosperity and happiness of the people.

NEWTON COUNTY.

The eleventh annual fair of our County Agricultural Association was held on spacious grounds adjoining the thriving village of Morocco, Ind., from September 10 to 13.

The display in the horse ring was large and extraordinarily fine. Magnificent specimens of Clydesdales and Normans being on exhibition. The farmers of the adjacent territory having been vieing with each other in the matter of horse raising, and great improvement and superior stock has been the result.

In the Swine Department some fine animals were exhibited, being mostly of the Poland China and Chester White breeds.

The poultry show was large and unusually fine. Almost all varieties being represented.

The Agricultural and Horticultural Departments were well filled, as the large display in the hall indicated.

Floral Hall was well filled and most tastefully and beautifully arranged.

Considerable time and labor was expended on the improvement of our excellent half-mile track, and some exciting and creditable trials of speed were given.

The fair was a grand financial success, and after paying out a large sum for permanent improvement (among which was the erection of a neat and commodious Secretary's office), and paying all premiums and expenses in full, there remained a balance of \$400 in the treasury. Our town people and farmers take a deep interest in the association and labor early and late for its improvement and advancement, hence the outlook for the future of our fair is flattering. Although crops were not large, nor times very good, this season we met with good success, and have no complaint to offer.

OWEN COUNTY.

The Owen Agricultural Society held its second annual fair at Spencer, Sept. 9 to 14. The exhibition of live stock and all kinds of farm products, farming implements and machinery was very full.

The aggregate premiums paid amounted to \$1,800. The attendance was such that the gross receipts were more than sufficient to meet the premiums and all expenses of the fair proper. Extensive improvements having been made this year, the Society has a small indebtedness yet outstanding. In addition to the usual attractions at county fairs, there were two successful balloon ascensions and parachute jumps and a series of very interesting Roman chariot races. The grounds of the Society have all the modern improvements except an amphitheater which will be erected next year.

Cereal crops in Owen County during the year 1889 yielded somewhat above the average. Corn, in the low bottoms of White river, was drowned out by the June freshet, and, although in many places replanted, did little good; otherwise, the corn crop was probably five per cent. better than the crop of 1888. Wheat gave a fair yield of from 12 to 25 bushels per acre, making a general average of about 16 bushels for the county. The present crop of wheat is far in advance of last year's crop at the same season, both in acreage and condition. The present open and warm winter has favored the early growth.

The soil of Owen County, as well as its climate, is well adapted to horticulture, and many of our farmers are taking advantage of this by planting orchards and vineyards. The smaller fruits are grown in abundance.

Commercial fertilizers are being introduced and experimented with in this county with marked success and satisfaction.

Owen County has a source of future wealth in her deposits of bituminous and block coal which underlie many parts of the county. These coal fields are yet untouched and will only require a little capital and labor to develop them. Some of the best building stone to be found in the world can be found in Owen County. A rich flow of the finest mineral water in Indiana is now pouring from the well in Spencer, and bids fair to make Spencer, with its delightful scenery, a summer resort in the near future.

POSEY COUNTY.

The condition of crops and stock in this county for 1889 may be summarized as follows: Wheat—Best crop ever raised, both in yield and quality, but a large part of it badly damaged by rains after cutting and before threshing.

Corn—Decidedly the best crop ever raised on all up lands; some lost along the Wabash river by overflow in June.

Oats—More than an average crop.

Rye, barley and millet—Very little was raised.

Hay—Timothy, a small acreage; clover, nearly all damaged by rain, and clover seed a short crop.

Horses—An average number and much improvement in breeding.

Mules—Few are raised here.

Beef Cattle—Not an average in numbers.

Dairy Cattle—A full average in numbers and more than an average in quality.

Hogs—About an average number, but great losses from cholera.

Sheep—Below the average of past years, but dogs a *full* average in numbers and no improvement in quality.

Apples, peaches, pears, cherries and grapes about an average; none grown for shipment.

Potatoes—More than a full average crop.

PIKE COUNTY.

It would be a waste of your valuable space for the writer to say that this year's exhibition of our society was, like former years, a decided success, as all who have any knowledge on the subject have long since been thoroughly convinced that it is immaterial what circumstance may arise to prevent, they can visit us with the positive assurance of having a pleasant, enjoyable and profitable time. Our fair was held during the first week of September, and notwithstanding the fact that nature supplied us with a superfluous amount of dampness on the opening days of our exhibition, the people were not deterred from coming and filling each department with the finest and grandest display of art and nature's productions that has ever been shown in Southern Indiana.

Everybody spoke in flattering terms of our magnificent system of water-works and natural gas illuminations. There is no good reason why our society should not excel those of any county in the State, as well as all those in Southern Indiana, as we have a county without waste land, except a small strip bordering on the adjoining county of Gibson. The rest is susceptible of the highest cultivation, and it is nothing unusual to hear of lands that produced as much as fifty bushels of wheat and eighty bushels of corn per acre. Besides this, our entire county is underlaid with veins of coal from seven to eleven feet in thickness, with from fifteen to twenty mines, producing yearly large quantities of coal that find a ready market wherever sent. For several years our society, instead of declaring dividends each year, expended the surplus in beautifying our grounds, and in building commodious and convenient buildings for the accommodation of exhibits, and a family residence for a man who lives within and takes care of the grounds, and now we are looking about for some means to expend the accumulating surplus for the advancement of our society.

— Taking it all in all, we are in a flourishing condition, and in consequence are happy.

PUTNAM COUNTY.

The first annual fair of the Putnam County Agricultural Association was held October 1 to 4, near the town of Bainbridge, and was a grand and almost unexpected success.

Our famous "blue grass" county had allowed the "fair" business to be monopolized by our sister counties for so long, that nearly every one had lost faith in our ability to organize and manage anything larger than a "pumpkin show." About the 1st of August this association was organized and forty acres of ground leased. This ground is located three-fourths of a mile west of town, and well suited for the purpose, being well drained and partly shaded by a magnificent growth of small timber. Our officers and members were without experience; time short; money scarce. Yet we set October 1, as the time to have a fair, rushed our list to the printer, surveyed our half-mile race course, and made things "hum" generally.

We built 300 stalls, 100 hog and sheep pens, amphitheater, floral hall and dug necessary wells. As the time approached we became aware that if the weather was favorable, our fair would be a success. The weather was all that we could wish for. Our stalls and pens were all occupied, and more needed. Our Floral Hall was found to be only one-fourth large enough to properly display the many good and beautiful things made by the fair ladies of this and adjoining counties. The exhibit of horses was exceedingly good. Three hundred and forty-three entries. One ring, sweepstakes, showing thirty-nine horses. The show of jacks, mules and cattle was fair only, as in our haste we had neglected to make our premiums as large as we should. The exhibit of hogs and sheep was very good; 131 and 92 entries respectively.

Our race course was reasonably well patronized, and, although freshly graded, some very good time was made, viz.: 2.27½ in the free-for-all trot. Our track is the regulation half-mile track, sixty feet on home and forty-five feet on back stretch.

The attendance was good, especially so on Thursday, which proved, as most every where else, the day. Our receipts were ample to pay all premiums and leave a handsome sum with which to reduce our floating debt. Another successful year will enable us to finish our improvements, enlarge our Floral Hall, build new ones for poultry, implements and agricultural products, and more stalls and pens, and place us out of debt. We owe about \$700 and have about enough unpaid stock subscription (mostly not due) to pay this. We aim to make this fair worthy of the county in every way.

We regret to say that the farmers of this county are not as prosperous as could be wished. Short crops, low prices, high taxes, trusts and grub worms have the same effect here as elsewhere. Our corn crop was not more than three-fourths of an average in quantity, and inferior in quality, many fields being almost destroyed by grub worms. Wheat about one-third to one-half crop, and of poor quality. Oats fair; timothy good; clover was badly frozen out.

The outlook for growing wheat is extra good. It got a late start, but the rains came and the weather continuing warm it secured a good strong growth.

PARKE COUNTY.

The Parke County fair for 1889 was superior to previous exhibits. The weather was excellent—all that could be desired. The attendance was large and the show, in every department, was not only large, but of fine quality. The horse department was in itself a great attraction, all the classes being well filled. The show of cattle was made up entirely from the many fine herds bred and owned in the county, and the display was highly creditable.

The expert system was tried in live stock departments, also in the art halls, with satisfactory results.

The pacing and trotting races, which are always a feature of our fairs, were unusually fine, and gave good satisfaction.

Wheat and corn were both good crops, and the oats yield was much greater than usual, though the quality was hardly up to the standard.

Considerable drainage is going on, particularly on the uplands, where its value is coming to be fully appreciated.

We are pushing the free gravel road system, about 200 miles having been constructed already. Good gravel is found in abundance at convenient distances, so that we may hope in the future to report further progress in this line.

A growing interest is manifested in poultry, an industry which has developed rapidly in the past three years. Liberal premiums are now called for in the poultry department of our fair.

PERRY COUNTY.

The eighteenth annual fair of our Agricultural and Mechanical Association was held September 30 to October 5, inclusive. The fair ground is beautifully located about a quarter of a mile from town on the Cannelton road. Being situated as it is, makes it one of the best located fairs in Southern Indiana, and can be reached from all points by rail or steamboats.

The success attained in former years was well sustained this year. In fact, the display in some departments were greater than usual, especially in the stock department.

As to the condition of agriculture in this county, the crops this year are about the same as in 1888. In fact, this county is well suited to the occupation of every man, while the rich soil and level ground which surrounds the Ohio River affords employment to a number of persons in the way of agriculture, the more elevated portion is abundantly supplied with coal, which is found to exist in large quantities.

With every facility for shipping, and roads extending in all parts of the country, men of all occupations sharing equally in the pursuits of the country, and with plenty of good water on the grounds, and other numerous improvements, Perry County will step forward next year with the best fair she has yet had, and show to her sister counties a new zeal and energy which has long been wanting to make the Perry County fair one of the fairs of the State.

PORTER COUNTY.

The spring season of 1889, was remarkable for plowing, sowing and planting of early crops; the soil being in excellent condition. The usual June rains were a little prolonged, so that the first cultivation of corn was hindered in some cases to the detriment of the crop. But these rains produced a wonderful growth of grass, especially clover, which was probably the largest growth produced for many years. The haying season was favored with good weather, as was also the harvest time. The oat crop, as to general average, was perhaps the best we had for several seasons. The yield of wheat was very uneven, varying from thirty bushels per acre, good quality, to as low as eight bushels of very poor quality.

The large size and perfect specimens of potatoes was unusual. Early kinds, and early planted corn on good ground, made a good crop, but late kinds were not matured to escape the frosts in the early part of September. From 25 to 50 per cent. of the yield of the latter was of little value.

The condition of the soil for the sowing of wheat was favorable, and the plant made from fair to excellent growth.

Now comes the fair season, which, excepting dust, was quite favorable. The general attendance and exhibits at our fair was satisfactory, making it both a social and financial success, the receipts being the largest yet received.

In passing over the county and noting the improvements made, it is easy to see that the desire of the farmer is for better stock, better care of them, better enclosures, better dainage and all that pertains to better farming. All that now hinders the fulfillment of his desires is the lack of better returns for the fruit of his toil.

RIPLEY COUNTY.

The fair for 1889 was a success financially, the attendance each day being larger than for several previous years.

The exhibit in every department was fully up to the former high standard, with the single exception of the display in Floral Hall. This, however, lacked not in quality, but in quantity. The articles shown by the ladies were particularly fine.

Our farmers are showing themselves more enterprising and progressive each year. Tiling is highly appreciated and is being more and more extensively used here. The amount of commercial fertilizers used is increasing annually. While farm lands are very cheap here, the yield of wheat, oats and potatoes compares favorably with the yield of other counties, where the farms sell for three times the money ours bring.

Corn, however, was not up to the standard last year. Wheat is now the most important crop, and farmers find a ready market at the roller mills that have recently been erected in several towns in the county. Two very extensive dairies have been put in operation at Osgood the past year. Our fair grounds will be improved the coming year by several new buildings and possibly by the erection of an amphitheatre, which will add greatly to our already unusually fine grounds.

RUSH COUNTY.

The yield of corn for 1889 was about an average, except in some parts of the county where the grub worm almost ruined the crop. The quality was considered below the average and some anticipate that the condition of this year's grain is such that it can not be relied upon to reproduce.

Wheat—The acreage and yield of wheat is good, and the quality somewhat above the average. The bulk of the wheat crop was sold during the months of October and November, and there remains but little more than will furnish bread for home consumption.

Oats—The average was small, but the yield and quality excellent; making the output about an average.

Clover Seed—While a most excellent harvest of clover hay was had, the yield of seed was far below the average.

Timothy Hay—The yield and quality of timothy hay was much above the average and all was harvested in good time and in fine condition. It is worth only about two-thirds of the average price here.

Fruit—Apples, cherries, pears and all small fruits gave an abundant yield, but the peach production in this county is almost nothing.

Vegetables—The yield of potatoes and turnips was most excellent. All other vegetables had but an average yield.

Horses—Rush County, for many years past, has produced very many fine bred horses, and the present year finds the number greatly increased. An organization for the improvement of trotting and pacing bred horses has been effected, and the future of the horse in Rush County is very bright.

Cattle—The very low price of cattle has in many cases driven them out of the pastures of many Rush County farmers; and, while the very best are found here, the interest has centered in other stock, at the expense of the cattle industry.

Hogs—Among our farmers we have ten men who are making the breeding of pure bred hogs their special business; and this, with the natural tendency to secure the best of every thing, has filled our county with pure bred hogs, chiefly of the Poland-China breed. The loss from cholera is estimated at one-third of the entire crop.

Sheep—The sheep industry has greatly increased during the year and on many farms where no sheep were found heretofore.

Mules—Very few mules are now raised in the county but the experience of 1889 will not show a decrease in the number.

Natural gas has been discovered in paying quantities in the northwestern part of the county, and the fuel is now being used by all the northwestern portion.

Manufacturing is conducted to a considerable extent through the county, but this could not be considered a manufacturing county.

Everything considered, the year has been one of profitable experience to those who were disposed to keep pace with enterprise and thrift, and, if adversity remain a stranger, this county will continue to maintain its position in the front rank as a banner county of the State.

SPENCER COUNTY.

The Spencer County Agricultural and Industrial Society held its fourth annual fair at Chrisnay, September 30 to October 5. The fair was well patronized by the people of the county. The receipts were somewhat larger than last year. The exhibits in all departments were good. Cattle, sheep and hogs in numbers exceeding those of last year. There is no mistaking the fact that the fair has been a great stimulus to the people of our county in matters pertaining to fair exhibits. At our first fair, four years ago, comparatively few premiums were awarded to the people of our county. This year, although competition from out the county was pretty sharp, our home people carried off their full share of the awards.

The wheat crop of this county, owing to the fall and spring drouth, was very thin on the ground. The quality was good, but was damaged in many instances by storms during harvesting and threshing.

The corn crop is above the average in quantity, but the warm wet weather is keeping it soft.

The tobacco crop is poor in quality, very short and cured up dark.

Potatoes are good in quantity and quality.

Clover seed poor and badly damaged by storms during the hulling season.

The apple crop was large and of good quality.

There has been but little improvement in the methods of agriculture in this county, during the last year. We are in hopes that the Farmers' Institutes will be the means of better methods and more thorough tillage in the future.

SULLIVAN COUNTY.

The annual fair of the Sullivan County Agricultural Society was held on the new grounds, one-half mile east of the town of Sullivan, September 9 to 14, inclusive. We had very good weather, and, notwithstanding dust, had as good if not the best fair so far held in the county, and had it not been that a great many farmers were busy sowing wheat our gate receipts would have been considerably larger. We have cut down our expenses, and by this means been enabled to diminish our indebtedness something over six hundred dollars. Our entry fees would have footed up larger but from the fact that we admitted all ladies' handiwork free.

The old officers were, on December 7, re-elected for another year, and we think that, with the experience of the past year and barring bad crops, will in another year be enabled to make a much better showing. It would be useless in this report to go into a description of our county as regards its resources and industries, as I find my predecessor has already done this in good shape.

Our business men are now taking hold of the matter, and have erected at their own expense a substantial building thirty-two by sixty feet.

Our Board of Directors are among the progressive farmers of our county, and are doing everything consistent with strict economy to attain the best possible results.

SHELBY COUNTY.

The time has again arrived for Shelby County to compare the standing and success of her fair with other fairs of the State, and in doing so she does not take a back seat to any of them. It may be there are other fairs in the State, the revenues from which are greater, or their bank account shows more dollars, but as to the matter of exhibition, there are few, if any of them, that come nearer giving value received to the visitor than the Shelby County Fair.

Its grounds, located one-half mile east of the city of Shelbyville, are beautifully shaded and well watered, undulating enough to give effect, and improved far to exceed the majority of the fair grounds in the State.

This society has been deservedly prosperous from its beginning, and during the life of the Association has never failed to pay its premiums, dollar for dollar.

The Sixteenth Annual Fair of the Association was held from September 3 to 7, inclusive, and was a success beyond the most sanguine hopes of its management. Every department was filled to overflowing, and the space that accommodated former exhibitions was found insufficient. New pens had to be erected for hogs and sheep, and new stalls for horses and cattle, before those who desired to exhibit the "best at the fair" could be accommodated. Many new exhibitors were present, and the return of old ones added much to the display and contest on these occasions.

The entries in all of the departments were far in excess of those of former years, and the awards by the committee gave general satisfaction.

Too much praise can not be given to the management of the Floral Hall or Ladies' Department. This department has been placed in the hands of the ladies, who assume the exclusive control of it, and this year particularly, too much praise can not be given to this able management, who have demonstrated their ability to make it one of the principal features of the fair.

The Agricultural and Mechanical Departments showed marked progress over former years. The display in these departments was quite an interesting feature, and clearly demonstrated the pride of competition that has sprung up among our farmers and manufacturers.

It was in the Live Stock Department that the greatest interest was manifest among our farmers, and the display in this department did credit to the Association. An interest has sprung up among our stock raisers in raising good cattle, and while some prefer the Shorthorns, there are many lovers of the Hereford, Polled Angus, Holstein and Jerseys. The Shorthorns, however, have the preference, and it will doubtless be some time before they are supplanted by the other breeds.

While the Cattle Department had its devotees, the hogs and sheep were no less a center of attraction, and the display in each of these departments showed a marked improvement over that of former years.

From the number and class of entries in all of the departments, we would be justified in the assumption that Shelby County does not occupy a second position to any county in the State. With her 408 square miles of land, well timbered,

well watered and drained, and in a prosperous state of cultivation, there are few counties in the State that equal it, and still fewer that excel it in natural advantages.

The management of the fair has reason to congratulate itself upon the success attained last year, and especially so, as this success was attained under adverse circumstances. The first two days of the fair were rainy, but the last three witnessed the attendance of thousands, that so increased the receipts that the *omni present* chronic grumbler could but look happy.

Now for the fair of 1890, which we hope, by an increase of our premiums and purses, and the addition of several races, to excel all others held by this Association, or by any other association in this part of the State.

STEUBEN COUNTY.

Our fourteenth annual fair was held September 24 to 27, inclusive. The first two days the weather was very unfavorable, being both cold and rainy. The remaining two days were only tolerably pleasant. This condition of the weather kept many exhibitors away and materially reduced the general attendance.

The exhibit of horses was slightly deficient numerically but very fine in the quality of stock exhibited. In all other kinds of live stock the show was the best we have ever had. Of grains and vegetables the display was meager. The display of fruits, both in natural condition and prepared by the skill of the housewife, excelled that of any former fair. Floral Hall was well filled and neatly arranged, but the entries were not up to some former years. The mechanical exhibit was fully up to the average. We had less than the usual revenue from licenses and privileges, owing to fact that several fairs in neighboring counties were being held at the same time. Our gate fees were also a little short, but our receipts proved sufficient to meet all liabilities and leave us a little better than a "clean sheet" on which to commence the account of a new year.

The past year has not been a very profitable one for our farmers. Wheat and oats yielded fairly, but the price has been so low as to leave little profit to the producer. Corn is less than half a crop, quantity and quality both being considered. Hay was about an average crop, and brings a fair price. The very low price of cattle and the prevalence of cholera among hogs have had a discouraging effect on the raising of live stock. Sheep have paid well, both in the wool clip and the sale of stock on foot.

The one crop that for a time boomed the market was apples. The yield in the county was immense and the price unprecedented. During October and November picking, packing and shipping apples was the prevailing industry in the county. Buyers and packers were everywhere. The amount of money realized by our farmers on the apple crop the past year has never been approached before. We are vain enough to think, with our high elevation, rolling surface, varied soil and numerous lakes, that we can beat the world on apples.

Under the loose and somewhat ambiguous provisions of our ditch laws, the low lands of our county are being rapidly drained. The law is very defective, allowing, in its application, much perversion and abuse. Farms are seamed and gashed by unsightly water-ways, for which they have little use, and are then often

taxed to the point of confiscation for the construction of what discounts, and, in many cases, almost destroys their value. The ditch system, as now conducted, is too expensive and out of all just proportion to the benefits conferred. It is the maximum of cost for the minimum of benefit.

In two respects at least the farms of the county are now undergoing rapid improvement. The cabin of the pioneer gave place, a generation ago, to a more comfortable, but still cheap, class of dwellings. These, in turn, are being rapidly supplanted by a more substantial and more commodious class of buildings. A like improvement is going on in buildings for the shelter of stock and farm produce. The increased use of tile in underdraining is doing much to retain and increase the fertility of the soil, and it is hoped will, in some measure, stay the waste caused by the large open ditches.

TIPTON COUNTY.

The Tipton County Fair Company held its eleventh annual exhibition August 12 to 17, inclusive, and while the date was thought by some to be too early, the fair was a pronounced success, except the display in the Field, and Garden and Horticultural departments, which, owing to date of exhibit were not full. All other departments and classes were well filled, and the gate receipts were the largest in the history of the fair, enabling us to wipe out almost our entire indebtedness. This has encouraged the company so much that they have purchased eight acres more ground of which we stood sadly in need.

The wheat crop of this county was satisfactory, making an average of about twenty bushels per acre. Our corn crop was damaged by the frost, owing to the unfavorable season and the difficulty of getting a good stand at first planting. The oats crop was very good, as was also the hay crop. Fruit was small and of an inferior quality, but the past year would have been a prosperous one for our farmers if better prices could have been realized for their grain and stocks. Our farmers are raising better stock and are taking more interest each year in their improvement. It is simply a wonder how our farmers have been able to do so much tile draining, building gravel roads, clearing up their farms and building houses and barns and still have been able to pay for all of it. Our farmers are of the progressive type and are ready to employ such means as will enable them to advance in their calling. Our association, to encourage education, have this year added an educational department, offering liberal premiums, and expect in the future to make this department one of the leading ones of our fair. Some of our farmers have at their own expense sunk gas wells and piped it to their houses and are using it with great satisfaction and profit to themselves, and we believe before another year that a great number of farmers will be using natural gas of their own and will be entirely free from corporations, trust, etc., in this respect. Our farmers can not help but be as prosperous as any in the State within a very few years, as then they will have all the main roads piked, their draining all done, have good buildings and can accumulate money very fast. Every foot of our soil is of the best quality and is located near the capital of the State, only 39 miles north.

VIGO COUNTY.

The last fair of this county was a gratifying success, as it excelled in size and attractiveness of exhibition, attendance and profit any which had preceded it. A good season for the county and favorable weather encouraged the attendance. Attractions, also, which belonged neither to agriculture, live stock or the kitchen swelled the crowd and afforded the entertainment and amusement which the visitors have a right to expect, as they pay the bills.

The united influences of the prestige from previous well-conducted fairs, the favorable season, the increase of premiums, entertaining attractions and the liberal advertising encouraged by the Board of Directors, contributed to the success of the late fair. The net results of this exhibition were more than the increase of receipts alone, for there was a quality and spirit which must add to future success. There is reason for congratulation on securing an attendance and display long wished for and worked for. The attendance of nearly 20,000 people on Thursday of the fair, total receipts from tickets of \$6,700, and 4,370 entries, exceed, in proportion to outlay, the results secured by any other fair in Indiana.

There is still much to work for. All fairs, as a rule, were successful this year. Several large and uniformly successful fairs, held in our vicinity, compete with ours, and urge us to greater efforts. There is always room for improvement, and the public, which supports the fairs, expects it.

Nearly all departments of the last fair showed a gain in number and quality of exhibits. The experiment of expert single judges in three of the departments produced good results and seemed to be satisfactory to all exhibitors, except to those who will never be satisfied; but, during the four years I have observed the exhibitors, there was never a better feeling among them than in this year.

An innovation for this fair was the employment of single judges in more departments than usual, with satisfactory results.

The report from the farms of Vigo County for 1889 is most favorable. All cereal, root and fruit crops show an increased yield, if not always improved quality. In live stock, the light harness horse keeps the lead, and now that Axtell is, for a time at least, a Vigo County horse, the trotter can keep the lead. The draft horse does not meet with much favor and there are but few fine animals in the county. There is a very moderate increase in fine-bred cattle. It can be claimed that the fair has led to the sale of fine examples of all lines of stock to local breeders.

VERMILLION COUNTY.

Our fourth annual fair was held on the grounds one mile north of Newport, during the first week of October, 1889. The exhibition was fully up to former years. The display in all departments was good. This year the society adopted the "one-judge system" in the horse department and found it satisfactory both to the society and exhibitors, there being less complaint than was usually manifest under the committee system.

The principal products of Vermillion County are corn, wheat, oats and clover.

Mixed farming predominates. Tile draining is reclaiming and making productive thousands of acres of the low lands. The yield of wheat the past year was below the average. Corn, on account of the dry season and grub worms, did not mature properly. The hay and oat crop was good. The crop of vegetables were never better. Our county is well provided with free gravel roads and they are kept in good condition.

WABASH COUNTY.

The society of this county closed its thirty-seventh exhibition, held on spacious new grounds, September 27, with success streaming from every banner. The new grounds purchased by the society consisting of twenty-seven acres, is the finest in Northern Indiana. The entries exceed any thing in the past history of the society, there being a total of 2,169; receipts, \$5,045.85. Leaving us a neat balance in treasury to apply on our indebtedness. The interest seems to be on the increase, and the attendance reached the highest point yet attained. Premiums, as usual, were paid in full, awards were generally satisfactory, and visitors seemed pleased. Our report for 1888 contained a full description of the county, its resources and industries (as well as a detailed account of the new grounds.) The uniform success of previous exhibits attended the last exhibition only in an increased degree.

It is the policy of Wabash County to be progressive, and so we are devising new plans and adopting new methods in many of our show classes, to the end that we may attain to the highest possible results consistent with our environment.

Among the many advances, we are trying to systematize our plans of conducting fairs, and give every branch of industry its proper place. To this end we made classes for pure bred horses, such as Cleveland Bays, Hackneys and English Coach; also, class for standard bred horses, in addition to the three classes usually found in catalogues.

Being surrounded with so many natural advantages, and Wabash in such a rapid state of growth and development, we can assuredly look forward to a bright future for Wabash County.

WASHINGTON COUNTY.

The Washington County Fair Association held its first fair at Salem, in September last. The old fair association being unable longer to sustain its organization, surrendered its lands and improvements to satisfy the claims of creditors, whereupon a new association was organized, composed of fifty stock-holders, who subscribed \$100 each, the old fair grounds were repurchased and repaired, after this was done there remained a surplus of \$700 in the hands of the treasurer, thus putting the association upon a substantial footing and insuring its future success. The entire week of our fair was wet, disagreeable weather, and our first fair was held under the most unfavorable circumstances. However, we were very successful, everything considered. We had a splendid show of thoroughbred and grade

horses, cattle, sheep and swine, and the Agricultural Department was well represented. The attendance was larger than we expected, and the receipts were sufficient to pay all premiums and expenses.

The entries were up to the usual standard in point of numbers, and much better in quality, showing conclusively that our county is fast improving under the influence of a well-conducted agricultural fair. A most gratifying showing by our fair was that the premiums on live stock were awarded mostly to residents of our county, and the same stock received even higher awards at the neighboring fairs.

Our grounds are new, well-improved and have many natural advantages which are possessed by few others in the State. The county is also favorably located for holding a fair, and under the new management will certainly be as good as any in Southern Indiana.

WAYNE COUNTY.

Our society has been organized since January, 1884, but from the best information received the Wayne County—or Richmond—Horticultural Society was organized about 1856. This society has had its seasons of encouragement and of discouragement, but it has lived through all, and during the past year, although the paid membership has not been so large as it was last year—numbering seventy members this year—yet we believe the interest manifested has been quite as good and our attendance fully as large, for many who attend regularly do not pay, and our meetings usually exceed 100 members.

We have had special essayists, from among our home talent, appointed for the different meetings, who, with two exceptions, have met their appointments, either with a carefully prepared paper or an interesting talk; and in these two cases papers were volunteered in their stead. These papers and talks have been profitable and instructive, and a source of pleasure to the society. At a few of our sessions subjects for discussion were introduced, and we found this an interesting feature.

During the year our meetings have been held at the residences of members until the weather became too cool to have the houses open, when the large attendance made it advisable to meet in some public room, and our later meetings have, through the courtesy of our city officers, been held in the city building.

While we have held no regular fair this year, premiums have been given at four of our meetings, as follows: In May, to the ladies for the best loaf of salt rising bread. In September the premiums were on grapes, pears, plums, peaches, flowers and grape jelly. In October they were on fruits, jellies, vegetables and flowers; and in November on chrysanthemums. On all of the occasions the display was quite creditable. At every meeting there have been good exhibits either in fruits, vegetables, grains, flowers or miscellaneous articles.

Agricultural.—The mild winter of 1888–89 was advantageous to the wheat, and the crop in our county is reported to be rather over an average crop. The yield has been good, most wheat having averaged 60 pounds to the bushel, though some has fallen as low as 56 pounds to the bushel.

In May the hay crop seemed to be a total failure, but it has proven a full crop, some meadows being very heavy and yielding two tons to the acre. The clover yield has not yet been reported to the society.

The odds were all against the corn crop this season, hence the yield is very light. The backward spring retarded the planting; then heavy rains prevented working it at the proper time; and, lastly, the grub worm made great ravages, until in places there will not be more than one-half a crop.

Early in the season the oats crop promised fairly, but the rust has reduced the yield to about 40 per cent. of a full crop.

Vegetables. Sweet potatoes are small, but the quality is good; yield only fair. The crop of Irish potatoes is reported fine, save in a few neighborhoods. Those exhibited have been unusually fine.

Pumpkins, squashes, beans, turnips and cabbage have done excellently.

Stock. Some cholera is reported among the hogs. Cattle are doing well, but prices are low.

Horticultural. The grape yield was quite below an average, owing to two conditions—the frost late in the spring injured the germ, and later the rot struck the grapes, making the clusters quite imperfect.

Small fruits were about an average, though the cherry and strawberry crops fell short. Gooseberries yielded abundantly, as did blackberries and raspberries. Currants produced a fair crop.

Orchards. In the early part of the season the orchards bade fair to produce abundantly, and in March the buds were reported safe, but the late frosts and the ravages of insects reduced the crop of apples to less than 20 per cent. of a full crop. Plums and peaches not above 10 per cent of a crop. Pears did well, and the butter pear was finer than for years.

In February a Farmers' Institute was held under the auspices of this society, and much interest was manifested in it, and we think it has been beneficial in its results.

WARRICK COUNTY.

The thirty-first annual fair of our Agricultural Association was held at the new fair grounds, at Booneville, from October 7 to 12. The grounds, which occupy a level tract of land adjoining town, contain about thirty acres.

Being favored with pleasant weather, we had a large crowd and a good exhibition.

Our large and commodious floral hall was filled full, and presented a scene of beauty, such as speaks well for the industries of the county.

Great interest is being manifested by the agriculturists of the county, and the prospects for a good fair, in 1890, are flattering.

Warrick County is situated in the southern part of the State, on the Ohio river. Its surface is generally level, or gently rolling. Large portions of the county, which were formerly occupied by low or flat lands, are being cleared and amply drained, thereby becoming the best farming land in the county.

Warrick is one of the leading counties in the State in the production of tobacco, wheat, corn, hay, oats and stock. The healthful climate, the productive soil, and the good average yield, commend it to any class of agriculturists. The county is well watered, the surface drainage is perfected by means of numerous creeks, ditches and tile routes. Cold, healthful water may be found in abundance at a depth of from four to thirty feet.

We have three railroads in operation, and two prospective roads. We have a number of manufactories, such as tile mills, flouring mills, planing mills, lumbering mills, etc. The coal fields of the county are inexhaustible. Large shipments are made daily from mines in all parts of the county.

This is an agricultural county, on account of location, easy access to market, fertile soil, and healthful climate. It is a manufacturing county, because of its extensive coal fields, railroads, timber, etc. Is heavily timbered with deciduous trees, mostly poplar, oak, walnut and hickory.

Within the last few years quite an interest has been manifested in breeding thoroughbred stock. In the county are a number of imported and standard bred horses, registered cattle, of different breeds, such as Durhams, Jerseys, Holsteins, etc. Also, sheep and hogs of all breeds and grades.

The crops of 1889 are above an average.

ACTON DISTRICT.

The seventh annual fair of the Acton District Fair Association was held September 10 to 14 inclusive. The weather was fine, but as a majority of our farmers were busy with their wheat crop the increase in the attendance was not as large as was expected. The fair, as a whole, was considered the best ever held at the place. All the available space being taken in the agricultural, horticultural, and the new hall erected for the womans' department.

The fine display of horses, cattle, sheep, hogs and poultry, would equal any county exhibit. The usual attractions were offered for the entertainment of the people and every one seemed to enjoy themselves.

The improvements made this year wiped out the cash balance from the last fair. The premiums this year were increased 100 per cent. over those of last, and paid in full, leaving a neat balance. The Acton Fair has had its drawbacks, but seems to have overcome them and now is advancing with this progressive age.

Under the auspices of the Acton Fair Association and State Board, a Farmers' Institute was held February 14 and 15, which was greatly enjoyed by our people who desire a continuance of the same.

Agriculture in our district is in a prosperous condition. Wheat an average crop. Corn damaged considerably by the grub worm and probably not over two-thirds of a crop. Oats better than an average. Hay over an average but considerably damaged by rains during the harvest. Clover seed almost a failure.

Our roads are improving. Farmers are working out their taxes, hauling gravel and in several instances clubbing together and donating their services several days, in order to finish a mile so that it can be turned over to the county.

Tile factories are working full time which means better drained farms.

Commercial fertilizers are coming into favor, and different solutions of the fence question can be seen on as many different farms. Farms are better tilled and consequently barns are well filled.

ARCADIA DISTRICT.

Our association held its fourth annual fair August 19 to 23, inclusive. We had nice weather, and as a result all departments were filled, but the crowd was lacking, and our fair was not a financial success. Some of our best farmers and business men take little interest in or manifest no anxiety as to the success or failure of our fair. We would be encouraged if such men would offer their services and wish us success by their presence, such a feeling by all the substantial men of our county would make our society feel good, if nothing more. I will say for the farmers in this locality that they are making rapid progress in agriculture, and as time advances are gaining rapidly in practical knowledge of the wants and capabilities of the different localities, and are thus enabled to make the very best of all natural advantages at command. Their farms are in a high state of cultivation, most of them have fine houses, good fencing, careful drainage, with an excellent quantity of all kinds of live stock.

Thankful for the past and hopeful for the future, we trust we shall yet send in flattering and praiseworthy reports, when enlarged ideas, enlightened views and general interest shall inspire the people to take hold of these things with more vigor than they do at present.

BRIDGETON UNION.

The society held their twenty-eighth annual fair at Bridgeton, Parke County, from August 5 to 10, inclusive. Owing to the extreme wet season, the fair was held too early to have the success that it otherwise would have had. The farmers not having their grass all cut, nor their wheat threshed, yet, notwithstanding all the drawbacks, the fair was very good in most of the departments. The Horse Department was well represented in all the classes with some very fine animals, and had as large a number of entries as at any previous fair. The Cattle Department was well represented by Shorthorns and Galloways. Sheep and hog pens were all full of the best stock. The Poultry Department was extra fine. The expert judge claims it was the best he ever witnessed at a district fair. The Grain Department was not very well represented, owing to the fair being held early, and the lateness of the season. And the same might be said of the Horticultural Department. The Floral Department surpassed that of any previous fair, both in quantity and quality. The Mechanical Department was well filled. There were not as many entries in the Woman's Department as usual, but the articles were all very fine. Our society has adopted the expert judge system in the Woman's Department for the last two years, and we find that it gives almost universal satisfaction, and have also tried it in the stock rings with equal success. We think the time will soon come when the judging at our fairs will all be done by expert

judges. Our society enlarged its grounds this year, built a large number of new horse and cattle stalls, and commenced a new regulation time track, but owing to the wet weather, did not get it quite ready for the fair, but will have it in time for the fair of 1890.

The condition of agriculture in our district is in good shape. There is quite an amount of good stock being brought into and raised in the bounds of the district. Notably is this the case in road horses. The crops were good with the exception of wheat. Corn crop good in quantity, but very poor in quality. Hay, a full average; oats, good; clover, not very good, not much seed was saved. About the average acreage of wheat sown, and is looking unusually well at this season of the year; looking as well at the close of the year as it generally does the middle of April.

EASTERN INDIANA.

The Seventh Annual Fair of our Agricultural Association was held on the grounds of the Association at Kendallville, commencing September 29 and closing October 4. The previous meetings held here have always been well attended, but on this occasion the fondest hopes of the managers were fully realized. The exhibits, generally, in quality, were as good as on former occasions, if not better, while in quantity, in nearly every department, there was a marked increase. The entries, in fact, were larger in every department, except possibly in the Poultry. Much interest has always been noticed in the Horse Department, and all lovers of this noble animal have always been delighted in all former efforts, but it remained for the exhibition this year to eclipse any display ever made before on the grounds. Imported horses, of course, took the lead, but many fine specimens of native stock were observed. The different breeds present were Normans, Clydesdales, English Shire, English and French Coach, Hambletonians, and several very fine Belgians. Close observers and good judges also saw many exceedingly fine-shaped grades, which rivaled even the high-priced imported stock. The display of horses of all kinds attracted the admiration of a large number of farmers and horsemen, and when the examination in the different classes was made, a dense crowd of eager and much-interested lookers on was noticeable outside the ring. Had the exhibition been for horses alone, the average visitor would have been well satisfied, but a greater feast was in store for the sight-seer. If the visitor had any taste to see fine cattle, an opportunity of rare excellence was before him, for in this department nearly every variety was to be seen, and those of splendid quality. In the Sheep and Swine Departments, the show was so large that the managers were forced to build a large number of extra pens, even after the exhibition had commenced. Many of the entries in these two departments were from outside the State. The display in Floral Hall was exceedingly fine, and reflected much credit upon the ladies, under whose supervision it has been operated for several years. The Agricultural Department was particularly attractive; the entries large, and the arrangement of the various articles in exquisite taste.

Machinery Hall was filled to its utmost capacity with farm implements of all kinds in motion. Each enterprising dealer or agent vied with the other in showing the extra features of his particular machine or implement. Here again the

practical farmer was found earnestly investigating the merits of the different articles. Perhaps, nowhere on the ground could be noticed a more interested or larger number of farmers. The speed ring presented an animated scene each afternoon where trials of speed were made, and was watched with eagerness by thousands of people, old and young. Lovers of fast horses enjoyed a fine feast, for some excellent time was made by some of the flyers. The contests were spirited, and but little of the usual and pernicious jockeying was observed. The usual grand parade of live stock, which has become one of the distinctive features of the fair, came off on Friday forenoon, and was witnessed by a dense mass of happy and delighted people. Another particularly pleasant feature of the meeting was "old soldiers' day," on Wednesday. Every honorably discharged soldier or sailor was given a free pass, including dinner. The day was a very pleasant one, not only for old soldiers, but their friends as well. Wednesday was also school or children's day, and many of this class accepted the invitation and became guests of the association. Wednesday, which by many fair managers is considered of only secondary importance, was thus made an important day, and although many passed the gates free, yet the cash receipts of the day far exceeded those of any former Wednesday. It was not only a day of profit, but one of rare enjoyment.

After the premiums and purses, including all expenses, were paid in full, a sufficient amount yet remained in the treasury to enable the managers to pay a dividend of 20 per cent. to stockholders.

FAIRMONT UNION.

Our association held its sixth annual exhibition at Fairmount, September 16 to 20.

The exhibit in nearly all departments was good, and, in some instances, excellent.

Our horse show was equal in number to that of any previous year, and generally of a superior quality.

The cattle show was better than that of last year, and, in fact, the entries in all departments were ample, except perhaps that of sheep and agricultural implements.

The fair was a success, in a general way. The weather was fine, the attendance large and the receipts correspondingly good. The premiums were paid in full and a dividend of six per cent. was paid the stockholders, besides a neat surplus left in the treasury.

The races were most interesting and exciting to the people, being hotly contested.

The state of agriculture has not been the best in this district during the past season. The corn was very much short of an average crop; quality inferior. The wheat crop, although a full acreage, was of somewhat inferior grade. Potatoes average, both in yield and quality. Orchard fruit was scarce, although some very fine apples and pears were grown on young trees.

The growing crop of wheat, although very short in the late fall, now looks well, owing to the warm winter and ample rains.

KNIGHTSTOWN DISTRICT.

This is a new organization formed by thirty-three of the leading citizens of Knightstown and vicinity, who purchased the property of the Knightstown Union Agricultural Society, and this, the first fair of the new organization, was a perfect success, both as regards the exhibition of goods and animals, and the attendance of the people, and while a special effort was made to secure a large exhibit, the management was also successful in securing many of the so-called modern and popular attractions to amuse, instruct and interest the people.

The entries were very large. The display of live stock was the finest ever witnessed on the grounds, and the exhibitions in the art, floral and fruit halls were grand. The people of this part of the State, including exhibitors from Indianapolis, Richmond, Anderson, Shelbyville and other places vied with each other in making the displays in the halls superb.

The agricultural department was not to be out-done, and our agricultural and mechanical industries were shown to good advantage. Power was furnished free and there was more machinery in operation upon the grounds than during any period of five years in the past.

The Speed Ring was well patronized. Competition was hotly and honestly contested. Several of the best horses of Indiana, Ohio and Illinois were entered. Taking the fair as a whole, it demonstrated what pluck and hard work can do, and that the development of the country has been substantial and that the love and appreciation of the people for a good fair is not waning, but is on the increase.

The fair was a financial success. All premiums were paid in full on the last day of the fair, and every person went away happy and contented, with a good word for the management. Our grounds are undergoing extensive improvements and we feel that success next year is assured.

LAWRENCE DISTRICT

The Ninth Annual Fair of this Association was held at Lawrence, September 3 to 6. Owing to the continued rainy weather, it was almost a financial failure.

The entries and attendance was not what they usually are. There were sixty-nine entries in the Horse Department, and many fine animals were shown. In the Cattle Department there were forty-eight entries, including two local herds of pure bred Shorthorns, and two herds of Jerseys, with some high grades. The Sheep, Hog and Poultry show was not up to the usual high standard, but good in quality. The show of grain, farm and garden products, and textile articles, was quite commendable under the circumstances. The Mechanical Department was well filled. Our farmers are in the front rank in introducing the most improved implements of all kinds on their farms to facilitate and promote successful farming.

The soil here is adapted to cereals of all kinds, vegetables, and most all kinds of fruit that are grown in this climate. Underground drainage is very popular, and is being successfully used here.

The farm fence is mostly made of wire, slats and posts, the slats platted in the wire and stapled to the posts. It makes a neat and durable farm fence.

LOOGOOTEE DISTRICT.

The seventh annual exhibition of the Loogootee District Fair Association was held August 27 to 31, inclusive. The weather was favorable. The exhibition was about up to the average, but the attendance small; hence a financial failure. From some cause the masses of the people did not manifest enough interest to attend. The general condition of agriculture in this section, we think, is advancing. Each year there seems to be an increased interest in the better grade of all kinds of live stock; also in buildings, fencing, drainage and adaptation of soil. In fact, our farmers are becoming better students of agriculture; hence better farmers. We have a soil that seems to be wonderfully adapted to a great variety of agricultural pursuits, and with the proper study there is no reason why we should not soon be as prosperous and wealthy as other portions of the State.

MIAMI AND FULTON.

This society held its seventh annual exhibition on grounds near the town of Macy, Miami County, from September 11 to 14, with very satisfactory results to the officers and board. The Live Stock exhibit was up to the usual standard of excellence, and about the same number of entries as heretofore.

Agricultural Hall was not as well filled as usual, because of very wet weather through the growing season, followed by sudden drouth on maturing, but what was lacking here was more than made up by the grand exhibits of fruit and kitchen and dairy products, which was unusually fine, also, Art Hall was filled to overflowing with such useful and fancy articles as only the good wives and daughters know how to prepare, and which add so much to the comforts and attractions of our homes.

That the old-time selfishness is passing away is evidenced by the friendly competition that our people enter into at our fairs, and the willingness with which they submit to the decisions of our awarding committees.

Taken all together, our crops have been a fair average. Wheat an average yield, but not full weight. Oats, a full crop of good quality. Corn below an average, both in yield and quality. Fruit, fair crop. Hay an average crop, but somewhat damaged by unfavorable weather at harvesting.

Live stock has yielded about its usual income to our farmers. Our stock men seem determined that the scrub of every kind must yield up his place to his more comely and better-paying relative, the high grade and full blood. This is evidenced by the fact that but a few years ago a registered animal of any kind was quite a rarity in this district, while now they may be numbered by hundreds, not allowing any one kind of stock to monopolize the matter. As in horses, we have the Draft, the Light and General-purpose. In cattle we have the Shorthorn, Hereford, Holstein, Devon, Angus and Jersey. In sheep we have the Spanish Merino, the Middle and the Long Wools. In swine we have the Poland China, the Berkshire, Duroc, Chester and Yorkshire, while in Poultry we have several of the best standard breeds. Our soil is well adapted to general farming, as all crops adapted to this climate do well with us.

NORTHERN INDIANA AND SOUTHERN MICHIGAN.

The eighth annual fair of our association was held on grounds midway between the cities of South Bend and Mishawaka, September 16 to 20, inclusive. Our exhibition was equal to, and, in many departments excelled, that of former years. The show of live stock was especially fine. The Clerk of the Weather Bureau was not on our side this time; it was cool and unpleasant every day of the fair, yet our attendance was good and all seemed satisfied. The management spared no pains to try and please their patrons, and we find our halls, large as they are, much too small for a proper display of our exhibits. Our experience this year with the one-judge system is very satisfactory, and, in the future, will be extended to all classes of live stock. The past season was favorable for all crops until the first of August. After that, corn and pastures suffered from lack of rain, and the early frost in September found but little corn matured. Half of the crop was soft and unfit to crib. Other crops were fully up to the average.

NORTH SALEM.

Our fifth annual fair was held the first week in September. The weather was unfavorable. A heavy rain falling on Wednesday night, kept a great many away on Thursday. Each department was well filled. The horse show was extra good, twenty-seven stallions were shown for sweepstakes, which would have done credit to any fair. All the stock pens and stalls were well filled. But we think that the Shorthorn cattle department was not as well represented as it should have been, when we consider that we are in the center of the great cattle shipping district of the State, and that our premiums were such as to be an inducement to such cattle.

North Salem is situated in the northwest township of Hendricks County, and is bounded on the west by the great grain and stock producing counties of Putnam and Montgomery, and on the north by the fertile county of Boone.

The location of our fair and the adaptation of the surrounding country to produce everything needful to make a fair attractive and beneficial to those that attend, are the great sources of success in the past and our hope in the future.

NORTHEASTERN INDIANA.

The Northeastern Indiana Agricultural Association held the eighteenth annual fair from October 7 to 11, inclusive. The weather was rather cool, owing to lateness of the season, but clear and rather favorable otherwise. This being the last fair in our circuit and in this part of the State, fair-going and show people were more numerous than usual. The entries in point of numbers were equal to, if not in excess of, that of any former year. The exhibits in all departments exceeded our expectations. Although Floral Hall has always been well filled, yet this year the ladies have the credit of excelling all former exhibits, both in numbers and fineness of work.

The display of live stock was very large. The horse department was filled to overflowing. The association this year built thirty-three new stables, and yet the

managers were compelled to arrange for more stable room to accommodate exhibitors. Heavy draft and general purpose horses predominated. There was an unusual number of speed horses, on account of there being no charge for entries. But the races were not as good as we have had in years past. The cattle show was very good, and, with the exception of one herd of Ayreshires, the exhibit was wholly made up by home breeders. The sheep pens were well filled with choice thoroughbred fine and coarse wools, principally from our own county, and the same may be said of hogs. The fact that prior to the organization of this association Dekalb County was destitute of thoroughbred stock of any kind, and now our exhibits are principally made by home breeders with stock that will compare favorably with the more extensive stock shows, proves that through the influence of our fair an interest is manifested among farmers and stock raisers in regard to securing the best breeds of stock possible, as well as all the improved products of the soil. Our poultry show has steadily increased in point of excellence and numbers until we have a very fine display of fowls. The Fruit and Vegetable Hall was well filled, and in quality the exhibit was above the average. Our attendance was better than last year, and the managers feel gratified with the success of their 1889 meeting.

A new interest seems to have developed. A meeting of stockholders was called and the capital stock increased from \$10,000 to \$15,000 in order to issue more stock and, if possible, get in new, energetic fair workers to help make it more successful.

In conclusion, briefly summarizing the condition of agriculture in our county, will say: All farmers who skillfully till their lands have been rewarded with a good average crop of wheat, oats, corn and hay in this section, those being the predominating features in this branch of industry. The yield of potatoes was very large. Thousands of bushels were shipped from this county. And the same may be said of fruits, and especially of apples. It would not be exaggerating to say at least 10,000 bushels of a surplus were shipped from this county this fall. Present indications are favorable for a good wheat crop next year. There has been but very little cold weather up to date, and rain enough to start the wheat nicely and give it a good, healthy growth for the winter.

NEW CARLISLE DISTRICT.

Owing to the early dates of our fair of 1889, September 4 to 6, we had the smallest exhibit of any season since our organization. Fruit and vegetables had not matured. Farmers were very busily engaged in their work seeding, and hence, did not fit up and attend the fair with as much stock as had been their usual custom. Our early date and the unfavorable weather, were both against us last year.

Our fairs held at this place have usually been quite successful. Our location is such, that we draw from both St. Joseph and Laporte counties. The New Carlisle and Farmers' Union Fair District consists of eight townships, as follows: Olive and Warren, in St. Joseph County; Wills, Hudson, Kankakee and Galena,

in Laporte County, and Three Oaks and Galion in Berrien County, Michigan. The prairies and woodlands embraced in this circuit, or district, are as fertile and productive as any spot of equal size in Indiana or the northwest.

Owing to the cold and backward spring of 1889, our corn crop did not all mature; perhaps half of our usual crop. The weather had its influence on the other crops. The wheat averaging about eighteen bushels per acre. Barley and oats were nearly an average crop, while the root crops were perhaps one-half the usual yield.

There is a very noticeable improvement in the horses, cattle, sheep and swine as well as the poultry raised in our district. Our farmers are coming to the front, and the best seems none too good for them. There is a marked improvement, also, in the character and style of our farm residences, and other buildings, and a general improvement in methods of farming. More clover seed is being sown than formerly, and a general tendency to feed and not impoverish the land.

The old cumbersome and unsightly rail fence is fast disappearing, and the board, slat, wire or hedge fence taking its place. The few marshes and swamps located on some of the farms are being drained, either by open ditches or tiling, and this hitherto almost useless land, becoming very productive, thus adding to the wealth as well as to the health of the people of our fair district.

To the credit of the ladies that aid us so materially at our fairs, I must say that the departments of which they have charge, are always complete. We have as fine a display, annually, in the domestic skill, textile fabric, fine arts and flowers as are seen at fairs of larger pretensions.

NORTH MANCHESTER TRI-COUNTY.

Our association held its sixth annual exhibition at North Manchester from October 1 to 4, inclusive. The attendance was large, and the receipts several hundred dollars in excess of any previous year.

We note a very great improvement in stock of all kinds from year to year, farmers vying with each other as to who shall show the most improvement.

The show of full-blood horses, notably Percherons, Clydesdales, Belgians and Shires, was excellent in quality, as well as in numbers. General purpose and light harness classes were full, and some excellent specimens shown.

The Cattle Department was graced by some exceedingly fine herds of Holsteins and Shorthorns. There was the finest exhibit of hogs ever shown upon our grounds, including many premium herds.

Sheep were well represented, and were of excellent quality, as were also the exhibits in the Poultry Department. The display of agricultural implements was not so good as we wished for and expected, but we hope by another year to be able to give them better accommodations, and will doubtless have a better display in the future.

In the Agricultural Hall we found a decided improvement over former years, and had a grand exhibit. The Floral and Art Hall was filled to overflowing, every available space being taken, and the display as fine as any in the State.

The one-judge system has proved for us a grand success, and we have adopted it in all live stock departments. Exhibitors are better satisfied, and the Society has less trouble than with the committee plan.

We think that with farmers' institutes once firmly established, and farmers interested in more systematic farming, we will feel its beneficial effect in our agricultural societies. The better educated the farmer, the more of his products will find their way to the State and local fairs.

The crops in this locality were good in quantity, but only fair in quality. Wheat was somewhat shrunken, and prices ranged low. Owing to the cold, wet spring, corn came badly, and necessitated a considerable replant, which did not mature; hence a great deal of soft corn. Other crops were good; oats and hay in abundance. The apple crop was perhaps the largest that this county has had for many years, and were in great demand, there being over 2,000 barrels shipped from this point, besides many being used by the canning company.

ORLEANS DISTRICT.

The tenth exhibition of our agricultural association was a complete success. The fair had been thoroughly advertised, and as the people had been prevented from attending neighboring fairs on account of inclement weather, they availed themselves of the opportunity of attending our fair. The weather was not propitious during our exhibition, but it was not bad enough to keep the people from coming. The officers did all in their power to give satisfaction to the exhibitors. The premiums were liberal and the accommodations good. The exhibitors expressed themselves well pleased, and signified their intention of returning next fair. The attendance may be approximated at from 2,500 to 3,000 per day. We do not charge any entry fee, but depend entirely on gate fees for proceeds wherewith to liquidate expenses. There were over 400 entries of live stock, excluding fowls, and over 300 entries in the Floral Hall. Our total receipts amounted to about \$1,500, and our total expenditures about \$1,000. The management cut the premium list down considerably through fear of not being able to meet the heavy expense of a large list of premiums. But as confidence seems to have been restored, preparations are being made on a large scale for our next fair, which will be held September 10 to 13. Our association has awakened an interest in Orange and adjoining counties in agriculture, farm improvement and stock raising. Our farmers have nobly responded to the efforts put forth in their behalf, and the spirit of progress and improvement can be felt in the air. As an outgrowth of the influence of our association, we were enabled to hold a Farmers' Institute for the county, at Orleans, last November, under the auspices of the State Board of Agriculture and Purdue University. Prof. W. C. Latta and the Hon. J. Q. A. Seig being present and participating in the business of the institute. The institute was successful in every respect, and the good that will accrue to our people through its impetus, in our opinion, is inestimable. The prospect of the farming community is very flattering. The wheat crop is more favorable than it was ever known to be before. Live stock is plenty, and of a superior quality. Our county is prosperous so far as production is concerned, and if our farmers could find a market at a good living price for their products, we would be a happy community.

POPLAR GROVE.

The seventh annual fair of our Agricultural, Horticulture and Mechanical Association held on the association's grounds at Poplar Grove, Howard County, October 1 to 5, was not up to that of former years in point of exhibits, from several causes, among which we note:

1. A failure of the wheat crop in 1888, making money scarce.
2. A shortage in the wheat and corn crop of 1889.
3. The loss of nearly the total hog crop by the, so called, hog cholera, which was raging with disastrous results in the vicinity of the grounds during fair time.

And last but not least was a ten per cent. entry fee exacted at the time entry was made.

Nevertheless the exhibit was creditable in point of numbers, and, in quality, was of extraordinary merit, and the fair a grand success, financially.

REMINGTON DISTRICT.

Our society held a very successful fair the past season. The show of horses was never before excelled on our grounds; there being no less than twenty imported horses, beside the many fine home bred animals. The past season was a very good one for grass and oats, but the corn was not good, being badly damaged by high winds laying it flat on the ground, after which followed four weeks of cold rain, in fact, in some cases snow fell upon it, almost freezing it to the ground. This was the case with all early planted corn. Many fields were given up entirely. Although there is a great deal of land well tiled, the season was so bad that even on tiled land the crop was not good.

This section of country is raising a great many horses both in light-bred and heavy draft classes.

The good effects of the fair are very plainly seen in the much improved quality of all kinds of stock raised here

With reasonable weather, this section of country can compete with any part of the State in raising grain.

RUSH AND SHELBY.

The fifth annual fair, third as now organized, of the society was held near Manilla, Indiana, August 14 to 16, inclusive.

The exhibits for this year were better in almost every particular, than ever before in the history of the association. The parade of the premium stock at the close of the fair was a surprise to the superintendents themselves.

The display of horses was grand as might be expected by a glance at our locality.

In the Cattle Department, Shorthorns took the lead, in point of numbers at least, being represented by five exhibitors showing specimens hard to excel. We had a fine herd of Holstein Friesians. The Hereford and the "Doddie" were also here.

There were perhaps one hundred head of hogs on the grounds, six or eight breeders competing in some classes with swine almost perfection itself.

Crops this year were, to some extent, injured by pests common to the State, yet the shelves in the agricultural and horticultural departments were never so laden with the products of the farm, orchard and garden, nor the display so fine since our organization.

Accommodations had been increased but it was found they were entirely inadequate; stalls for horses and cattle, pens for hogs and sheep, without a single exception, were filled. Many horsemen competing for premiums that could not be given "quarters" on the grounds.

The displays of poultry, sheep, fine arts and miscellaneous exhibits were all creditable; in fact the fair was a perfect success, in every particular, except financially. The association was compelled to prorate premiums. Several reasons might be given for this. Our premiums were, perhaps, too large and too varied for the visitors we have. We are in an agricultural district and must draw our support mainly from farmers. We have a large indebtedness on which interest must be paid; a movement is on foot now to relieve us of this difficulty.

The association started out on the assumption that a fair should be an educator not only in agriculture, in intellect, but in morals as well; therefore gambling was excluded, also nearly all kinds of shows.

The race track was dispensed with or rather never adopted, though we have a fine track for showing horses in harness. This course relieves the society of many of the "hangers on" to fairs, and some fair goers think lessens our income. So it remains to be proven whether the "Quaker Fair," as it is sometimes called will have sufficient support.

The heavy forests of this fertile region will, in few a years, be reduced to mere groves. Farmers, that for twenty-five years carefully protected their woodlands, scrupulously saving supplies for "generations to come" have concluded that the future can take care of itself; that the developments of science—the inventive genius of man—will be equal to the occasion.

This belief is intensified by the fact that we are in a region that can be supplied with the best fuel ever known. Since our report, one year ago, Manilla has been abundantly furnished with nature's "ideal fuel"—natural gas. The surrounding towns are mostly supplied and wells are sinking in various parts of the country for the benefit of the farmers.

It will be only a question of time till it will be in general use unless some new discovery supplants it. Who can tell what the next decade—the next year, even, will bring?

SWITZERLAND AND OHIO.

Our report of the Switzerland and Ohio County fair for the year 1889 can be summed up in a few words: "a success in all respects." Good weather, large attendance, and fine exhibition of live stock, farm and orchard products, fine arts, mechanical skill, woman's handiwork, good exhibitions of speed, etc." Everybody seemed pleased with the management except the gamblers and liquor men, who were not allowed to ply their vocations. Our society is financially O. K. and will continue in the field as one of the best.

As regards the agricultural condition of this district, we have little to note in the way of improvement or innovation. Our crops for the year 1889, considered all in all, were perhaps about an average yield; wheat and hay hardly as good as the previous year; corn a fair crop; potatoes never better; tobacco reasonably good, and commanding good prices, 6 to 11 cents, will, perhaps, bring more money to our farmers than any other export. Fruit of all kinds has been abundant, apples especially profitable, thousands of barrels having been shipped from Switzerland County the past fall at prices ranging from \$1 to \$1.50 per barrel; this has given quite an impetus to fruit culture, and hundreds of acres of orchards have been planted this autumn and much preparation made for spring planting. We have a horticultural society in a lively state of activity, and it is claimed that our soil and climate are well adapted to this line of business. Our county received first premium at the State Horticultural Society meeting. Though our crops have been reasonably good, yet the low prices that have obtained, have made farming, considered from a monetary point of view, not much of a success. We presume that like low prices prevail generally throughout our country and that large quantities of wheat, corn, potatoes, hay, cattle and hogs can be had for little money.

There are but few new enterprises in this district, much idle capital lying in the banks. General rate of interest 6 per cent., though many are still paying 8 per cent. Our long delayed Ohio River Railroad, we are assured, will commence building this coming spring; it is expected that the country will reap large benefits therefrom. There seems to be more than usual interest manifested by our people in the agricultural and horticultural meetings, and we think this betokens good to the farmer, and will most likely bring about needed reform and improved methods in farming, probably widen the field of farm operations, and may cause an increase in both quantity and variety of farm products. The sheep industry seems to be on the increase; this kind of stock is more sought after, commands better prices, and is thought to be more profitable than most other live stock; this industry needs fewer dogs, which many people raise for pleasure rather than profit.

The past year has certainly been quite remarkable for its climatic conditions, alternating between wet and dry, four to six weeks with no rain, followed by a like period of excessive rainfall, the latter condition prevailed during June and part of July, for which cause much corn did not receive proper cultivation, becoming foul with grass and weeds, injuring the crop. Much hay was damaged in the harvesting, also tobacco was injured. Very little hot weather during the summer; very little cold weather the previous winter and none this winter worthy the name thus far, January 1, 1890; no snow; some light freezing the last of November; during December a few light frosts comprise the make-up of our winter so far. Wheat is growing right along and looks fine; stock finds good feed in pastures; violets and other out-door plants in bloom. As to the future, we opine, no man knoweth, such is our faith in weather prognostications and forecasts. General business and trade has not been brisk as desired, yet the actual wants of our people are well supplied; not much sickness in our country, and about the usual amount of enjoyment and good cheer prevails as formerly during holiday season.

SOUTHEASTERN INDIANA.

Though yet holding on to its organization, and retaining possession of its park and property, adjacent to the city of Aurora, Dearborn County, this society has, owing to financial embarrassment, held no fair for the past two years.

Though some people may admire a high-sounding name, we have derived but little benefit from one.

The interests and resources of this county should insure a creditable agricultural exhibition, but our farmers have never had the courage to rise above the sportsmen of the two rival towns within our borders, and organize a county society worthy of imparting agricultural information, or calculated to encourage its development, but have suffered themselves to be divided into two rival organizations, each led by the sports of their towns, trying to maintain two rival societies, holding fairs within four miles of each other, paying large premiums to encourage horse racing, and little or nothing to encourage the real agricultural industries, until the better elements of society became disgusted and withheld their patronage, leaving the management hard pressed for funds, which caused them to begin the sale of questionable privileges on their grounds; which, though in open violation of law, grew from bad to worse until their exhibition lost all semblance of fairs, and might more appropriately be called a bachanal for the benefit of gamblers. And so we, the farmers of Dearborn County, as far as agricultural societies are concerned, are in a played-out condition, but entertain hope that the farmers will muster the courage to organize a county agricultural society on such correct principles as will enlist the influence of the better elements, and be better calculated to inculcate a moral, useful and industrial education into the young and rising generations.

Though the system of farming in this county, owing to its uneven surface, can never be made as perfect as in the more level parts of the State, where the machinery can be used to better advantage, yet it is fairly good, the farms being small are generally cultivated by the owners to all varieties of grain, hay, vegetables and fruits to almost a certain profit, though it may not be great. Stock of all kinds can be raised to good advantage. Timber grows rapidly and soon becomes fencing material.

Lands have depreciated in value in the past fifteen years about forty per cent. in this county, caused mostly by the depreciation in the prices of the commodities it produces, such as wheat, oats, barley, hay, etc., caused by the competition from lands where they can be more cheaply produced, and the railroads affording facilities for the interior of the county to put their products on the markets. It is probable that this depreciation may never be regained; yet it need not mitigate against the future prosperity of the county.

The best rotation of crops on these hill lands, as generally conceded, is hay or pasture from three to five years, then corn one year, wheat two years, then back to meadow or pasture; or in place of the wheat, oats, followed by red clover, which is regarded as one of the best fertilizers that can be used on badly worn lands.

SHERIDAN DISTRICT.

The fifth annual fair of the Sheridan District Association was held on the grounds near Sheridan, September 2 to 6, inclusive. The display was large and varied, particularly in the Live Stock Department. The swine and horse show was very good. A great many animals from our own and adjoining counties were on exhibition, and competition was close. During the past season we had made some needed improvements on our grounds in the way of a new swine shed, also a new poultry house, both of which was filled, and other quarters pressed into service before the appointed time for the opening of our fair. The entries in all classes exceeded those of any previous fair, in fact was a success in every particular. We had rain two days, but on Friday (our last day), at 11 o'clock A. M., more persons had paid their way into our grounds than had ever paid in any one day previous. As to the general prosperity of the farmers, the crops were good with the exception of potatoes. There was an abundance of hay. Corn was a fair yield, as was wheat, also. Considerable ditching is being done in this country, and we look for better crops in the future. In fact, as it is now the yield in this section of everything the farmers in this State raise will compare with any other section, unless it is cattle. What stock there is in this section of all kinds is very healthy. Horses, hogs and sheep have been rapidly improved by the introduction of finer blood. The most gratifying results of our fair was the premiums on live stock and farm products, which were awarded, mostly, to residents of the county. The natural gas and oil developments of this section of country is one of magnificent proportions, and bids fair to make our locality one of great manufacturing localities of the State. We are only one mile from the west line of Hamilton County, and of course are very close to the counties of Boone, Clinton and Tipton. From each of those counties we get a great many entries to our fair, as well as quite an amount in gate receipts. Our fair started on September 2, \$250 in debt, when we closed our gates on the evening of the 6th, we had enough in our treasury to pay off all of our indebtedness, pay our premiums in full and leave a balance in bank to our credit of \$120.

One feature of our fair is, we always admit all persons over seventy years of age, free. And another feature, which we have just added, is, we have placed the Floral Hall (Ladies' Department) under the control of a lady. We are going to do away with green races, and, in the future, will have three or four-year-old races. We intend to have good contests of speed, for we have one of the very best half-mile tracks in the State. And, being situated as we are, twenty-eight miles from Indianapolis and twenty miles from Frankfort, on the L., N. A. & C. R. R., we see no reason why we should not have our speed-ring well filled. It has always been our ambition to pay off the Speed Department in full. Our past success is due to the untiring efforts of our officers, who have always worked hard for the success of the fair, all pulling together.

That all may know the receipts of our fair are not taken up by paying the officers high salaries, I will say there has never been one cent paid to an officer of this fair for his services as such officer, except the secretary, and he has never, in any one year received more than \$15

Our Directors are going to order more improvements next year, than have ever been made on our grounds in any one year, in the way of building more swine sheds, also an addition to our Floral Hall and some new stalls for track and stable horses.

As to our roads in this locality they are at times very bad. We need more gravel roads, and we think ere 1891 rolls around we will have one more gravel road at least.

The future looks bright for our patrons which, together with the record of our past fairs, certainly should be enough to insure our fair the success it so richly deserves in 1890. Be that as it may our directors are willing to stand by their old motto: "We strive to please."

WARREN TRI-COUNTY.

The sixth annual fair of this society was held near the town of Warren, which is located in the southeast corner of Huntington County, Indiana. The date was September 3 to 7, inclusive. This society has enjoyed six years of uninterrupted prosperity, having each year at its annual meetings reported a balance in the treasury after paying expenses and all premiums in full. These yearly accumulations have now grown to a handsome sum, sufficient to meet more than one reverse. This continued prosperity is no doubt due in a great measure to the management, however. The dates being at that season of the year most congenial, the weather has almost invariably favored us. The officers and directors, with two exceptions, are farmers, who are chosen from different localities throughout the district, which is composed of Huntington, Grant and Wells Counties. Thus each officer and director exerts an influence in his particular locality, and thereby contributes to the success of the fair. Another potent element which has contributed to the continued success of this fair is the mutual good feeling which exists between the farmers of the district and the business men of the town. During the five days of the fair, business is practically suspended. We are also greatly indebted to the good people of Wells County for our continued success. This county having no fair of her own, has taken great interest in the Warren Fair, and each year, great multitudes of the farmers of the county, and the citizens of the city of Bluffton have attended our exhibitions and contributed to our success.

This fair was next to the best the society has yet had. Owing to the extreme dry weather, the attendance and gate receipts were not equal to the best of six fairs, but was above the average. As an exhibition; however, of the agricultural products of the district, it was the best we have had, and in fact it was the best in all departments, except in the display of agricultural implements and farm machinery.

The Horse Department was exceedingly full, and the fourth days' grand parade was an exhibition of fine horses never before witnessed in this part of the State. The entries consisted of thoroughbred, imported Norman, Clydesdale, Belgian, Canadian, Coach and other noted breeds.

The Speed Department is the winning feature of our fair, and the liberal premiums paid, and the excellency of our half-mile track bring to our fairs the best and fleetest "trackers" in the country, and the entries this year in some of the

racers were so numerous that there was scarcely room on the track to start. The exhibition of cattle was up to the average, and consisted of fine herds of Short-horns, Herefords, Jerseys and grades. In this department the farmers of the district are becoming alive to their interest, and there is a nucleus of a great number of fine herds of thoroughbred cattle gathering in this community.

The exhibition of swine was not equal to former years, and we account for this shortage by reason of the extreme dry and warm weather, and the difficulty, thereby, of moving the fat porker. However, there were entries of fine herds of Berkshires and Poland-China.

The Sheep Department was better than in any former year and the entries more numerous. A number of fine flocks are being raised in the district, and we have reason to believe that a more general interest is being manifested in sheep husbandry at present than at any time for years.

The Poultry Department was of itself a fine show, the entries being the most numerous of any of the six fairs of the society. The varieties consisted of almost every kind known to the American standard. The poultry business in this district is worth more to the farmer than his wheat crop, and many of our best farmers have fine breeding pens of fowls.

The Grains, Vegetable and Fruit Departments were better than in any former year. The vegetable crop in this district was never equaled before, and the display in that line was simply beyond description. There was one hundred and thirteen entries in potatoes, and they consisted of thirty-seven varieties. The garden and orchard products were never equaled. The wheat crop was not up to the average and the quality was only fair, yet some fields made unusually large yields. The oat crop was very large and quality good. The corn crop was a fair average in yield, but very poor in quality. This, however, is a great corn county, and is consequently a great hog producing district. The low, wet, black land of these three counties of Huntington, Wells and Grant, which, a few years ago, were worthless to the farmer, have in recent years, been so completely drained by immense public ditches, and private under-drains, that it is now conceded to be better as a producer of corn than the best of river-bottom land. The farmer, who in years gone by, settled upon and cleared up a farm in these black, wet lands, and lived and kept out of debt until the era of ditches dawned upon this country, "builded better than he knew," and he is to-day our best and most independent farmer. The beautiful town of Warren is in the midst of this kind of an agricultural country, and is located on the north bank of the Salamonie river which is a tributary of the Wabash. It is not within the natural gas belt, but the other great natural resources of the district contribute to it material wealth and that of its farming community. The T., St. L. & K. C. R. R., a standard line from Toledo, Ohio, to St. Louis, Missouri, furnishes ample railway transportation, besides four of the principal highways leading into the town, are good gravel roads.

WAYNE, HENRY AND RANDOLPH.

The tenth annual fair of this association was held at Dalton, September 11 to 14, inclusive, and was fully equal to any of its predecessors. Premiums were paid in full and the interest is maintained in all departments as will be seen by the entries and gate receipts, the entries of live stock being considerably in excess of last year; the display in the Mechanical Department was the best yet made at this fair. Great improvement in stock and products has been made in the decade which closes with the present year; the wheat crop in this section was fair as to quantity, but much of it was poor in quality, a full crop is sown for the ensuing year; the corn crop was injured by the "grub," and was light compared with the bountiful crop of 1888; the oat crop was fair; hay excellent; fruit, an excellent crop, except apples; stock is generally in good condition; mixed farming prevails, though specialists who stay with their calling are usually successful; dogs continue to be the bane of the flock; tile drainage is being pushed with vigor; improvement of roads continues. About an average amount of improvement in the way of farm buildings.

WASHINGTON AND CLARK.

The society held its sixth annual fair at Pekin, Washington County, September 17 to 20, inclusive. The weather was fine, consequently we had a good attendance. The show in all departments was good; the horse rings were well represented; the cattle and hogs on exhibition were fine; we paid premiums in full; paid all other expenses and had a neat little sum left; the show in the hall was the finest we ever had. The effect of the fair can be seen in our district, not only improving stock and crops but the farms begin to have a fine appearance; crops of all kinds good; fruit, a good crop; the peach and berry crop did well, were plenty and prices good.

XENIA UNION.

The eighteenth annual exhibition of our society was held on grounds near Xenia August 23 to 26. The attendance was fully up to the average of former years, and greatly above those of the year 1888. The receipts were better than the previous year; we were therefore able to pay all expenses and premiums in full. Our exhibits were creditable, both to the exhibitors and society. In some Departments, to-wit: horses, cattle, hogs, sheep and poultry, it exceeded both in quantity and quality that of any year of the existence of the society, but in the floral and agricultural departments, it was short of former years. This was attributed, in part, to the early season of the year and dry weather, so that crops were not fully matured at the date of holding our fair. Crops in this locality were hardly as good as those of the year 1888. Wheat was an average; some better in quantity, but the quality was no better, owing to the prevalence of insects on the head while filling and ripening. Corn was not good, although a large breadth was planted;

the dry weather in the early part of the season, and the early frosts, materially injured it, so that we have a large quantity of soft corn. Other crops were about an average with the previous year.

Our people are in the main in a prosperous condition, although the past year has not been as remunerative as all would have wished. The products of the farm have been lower in price than for several years past, and cattle and hogs have been so low in price that farming is somewhat discouraging; yet all are looking for better prices in the future, and by a practice of economy will try to exist until the good time comes.

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA, 1889.

NAME OF SOCIETY.	PRESIDENT.	ADDRESS.	SECRETARY.	ADDRESS.
...	J. A. Davidson	Whiteville	Alex. Heron	Indianapolis.
...	Lewis C. Miller	Decatur	A. A. Nichols	Decatur.
...	John M. Ball	Lebanon	E. G. Darnall	Lebanon.
...	Hiram Hrogs	Rockfield	Z. Hunt	Camden.
...	James M. Davis	Mulberry	Joseph Heavilon	Jefferson.
Ass'n Society	James Porter	Washington	James C. Lavelle	Washington.
...	John M. Graham	Muncie		Muncie.
...	John F. Childs	Greensburg		Greensburg.
...	E. D. Chipman	Goshen		Goshen.
...	L. A. Becker	Rochester	John W. Davis	Rochester.
...	Robert Mitchell	Princeton	S. Vet Strain	Princeton.
...		Linton		Linton.
...		Greenfield		Greenfield.
...	Robert Simonton	Burlington	Leon T Bagley	Kokomo.
...		Huntington		Huntington
...	John S. Hadam	New Castle	Frank M. Millikan	New Castle.
...		Corydon	T. E. Getsendanner	Corydon.
...		Bondary	L. L. Gilpin	Portland.
...		Brownstown	W. L. Benton	Brownstown.
...	James W. Myers	Butlerville	Wm. G. Norris	North Vernon.
...		Crown Point	Walter L. Allman	Crown Point.
...	Parley A. Banks	Laporte		Laporte.
...	James H. Buck	Anderson		Anderson.
...	John P. Barnes	Howland		Howland.
...	E. J. Howland	Ellettsville	Geo. P. Campbell	Bloomington.
...	A. E. Johnson			
...	Jasper N. Davidson	Whiteville	F. L. Snyder	Crawfordsville.
...	C. E. Triplett, Jr	Morocco	Ed. W. Graham	Morocco.
...	Orlando Kimmell	Kimmell	E. B. Gerber	Ligonier.
...	Wm. M. Franklin	Spencer	Matt. Matthews	Spencer.
...	James A. Allen	Rockville	W. H. Elson	Rockville.

EXHIBIT OF AGRICULTURAL SOCIETIES--Continued.

NAME OF SOCIETY.	PRESIDENT.	ADDRESS.	SECRETARY.	ADDRESS.
Pike County A	Wm. Rigg	Valparaiso.	A. H. Taylor	Petersburg.
Porter County	M. A. Bridges	Pinecastle	E. S. Beach	Valparaiso.
Putnam County	Wm. C. Bennett	Winamac	A. W. Ador	Bainbridge.
Pulaski County	J. D. Owen	New Harmony	John T. Holsinger.	Winamac.
Posey County			Robert Clarke.	New Harmony.
Ripley County	Rosie Johnson	Elrod	Ewing H. Row	Elrod.
Rush County A	Fred A. Capp	Rushville	Chas. F. Kennedy	Rushville.
Shelby County	B. S. Sutton	Shelbyville	E. E. Stroup	Shelbyville.
Spencer County	J. S. Wright	Rockport	T. K. Austin	Chrieny.
Spencer County	Dr. E. D. Ehrman	Rockport	A. D. Darlinghouse	Rockport.
Staten Co	Jesse M. Gale	Angola	F. Macartney	Angola.
Sullivan Co	Thomas J. Mann	Graysville	James M. Lang	Sullivan.
Tippacano	Albert Henderson	Lafayette	Mortimer Leving	Lafayette.
Tipton County	G. W. Myerby	New Lancaster	E. B. Martindale	Tipton.
Vermillion	S. H. Dallas	Newport	Lewis Shepard	Newport.
	Leonard S. Briggs	Terre Haute	Charles C. Oakley	Terre Haute.
	Wm. Haven	Wabash	E. W. Powell	Wabash.
	David L. Hart	Boonville	John E. Baker	Boonville.
	Jesse C. Stovena	Centerville	Mary Parey	Richmond.

DISTRICT AGRICULTURAL SOCIETIES.

EXHIBIT OF AGRICULTURAL SOCIETIES.

399

NAME OF SOCIETY.	PRESIDENT.	ADDRESS.	SECRETARY.	ADDRESS.
		Acton.	Id.	Acton.
		Arcadia.	Id.	Arcadia.
		Bridgeton.		Perth.
		Kendallville.		Kendallville.
		Fairmount.		Fairmount.
		Covington.		Covington.
		Medaryville.		Franceville.
		Madison.	Id.	Stony Point.
		Pt. Wayne.		Pt. Wayne.
		Knightstown.		Knightstown.
		Oaklandon.		Lawrence.
		Loogootee.		Loogootee.
		Macy.		Wagoners.
		New Carlisle.		New Carlisle.
		Waterloo.		Waterloo.
		South Bend.		Mishawaka.
		North Manchester.		North Manchester.
		North Salem.		North Salem.
		Kokomo.		Carroll.
		Remington.		Remington.
		Sheridan.		Sheridan.
		Patriot.		Vevay.
		Warren.		Warren.
		Dalton.		Dalton.
		Sims.		Xenia.
	Eli Wade.		B. F. Clemans.	
	J. C. Beyer.		S. R. Davis.	
	Samuel Bowman.		Robert T. Barbour.	
	L. J. Nofsger.		E. H. Briggs.	
	John Durham.		Wm. J. Woods.	
	William W. Smith.		Wm. H. Madison.	
	O. B. McIntire.		Isaac F. Beard.	
	John R. Kercheval.		J. E. Dennis.	
	Jasper N. Jackson.		J. W. Eward.	
	Jones Good.			
	B. B. Beeson.			
	James McLain.			

206	2	75	63	54	153	526	48	122	68	6	140	574	196	12	280	1,709
232	15	43	64	122	101	577	51	188	44	268	181	161	103	70	280	1,720
180	11	28	16	22	59	268	16	167	105	384	160	312	100	30	280	1,243
120	10	43	41	40	19	263	23	109	131	57	312	230	45	22	280	959
245	10	28	30	45	21	379	30	215	60	575	230	230	45	30	280	1,554
343	16	27	55	131	92	687	3	114	26	188	220	220	34	106	280	1,360
69	3	24	44	39	10	209	6	11	28	159	53	53	20	27	280	285
206	13	110	48	104	256	737	82	289	28	92	839	839	188	210	280	2,317
249	21	57	15	23	22	367	15	121	6	253	318	318	43	50	280	2,140
259	23	65	14	36	60	456	14	237	6	709	140	140	78	210	280	2,140
67	9	99	110	67	123	486	55	325	216	681	443	443	106	121	280	2,359
166	10	86	64	81	44	370	6	131	42	281	135	135	41	43	280	1,087
250	10	100	150	300	220	930	175	30	40	100	110	110	20	80	280	1,486
346	4	48	119	224	223	966	49	123	7	159	609	609	100	186	280	2,199
263	7	26	23	30	41	905	45	118	17	173	243	243	114	3	280	1,103
386	8	66	125	146	505	1,236	92	252	64	889	930	930	196	637	280	4,378
317	16	92	79	101	247	852	63	173	26	932	550	550	45	78	280	2,169
250	26	50	52	46	42	452	31	139	26	270	216	216	47	6	280	1,216
..	..	..	..	..	..	..	..	17	26	13	..	..	..	..	..	56

Vigo Co. Agricultural E
Wabash Co. Agricultur
Warrick Co. Agricultur
Wayne Co. Agriculture

DISTRICT AGRICULTURAL SOCIETIES.

NAME OF SOCIETY.	EXHIBITS.																
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Field and Garden Products.	Horticulture.	Bee and Honey.	Domestic Skill.	Textile Fabrics.	Fine Arts.	Miscellaneous.	Special.	Total.
Acton District Fair Association	103	2	23	15	7	12	160	75	163	66	.	157	209	63	43	20	968
Arendia District Fair	77	13	11	22	81	66	259	15	73	33	.	232	102	31	16	.	556
Bridgeton Union	220	.	46	59	81	106	429	47	100	290	.	920	206	20	36	.	1,300
Eastern Indiana Agricultural Ass'n	277	.	181	220	186	226	1100	60	355	457	.	175	810	251	533	.	4,394
Fairmount Union	257	17	97	17	63	365	811	40	267	111	.	418	483	64	158	27	1,941
Fountain, Warren and Vermillion	223	8	17	51	74	51	424	31	110	67	.	103	344	127	.	.	1,686
Francesville Agricultural Society	153	2	19	7	18	16	215	14	86	34	5	103	93	11	7	.	554
Grange Jubilee and Agr'l Ass'n	60	1	6	.	6	17	73	57	60	17	6	25	53	115	54	12	254
Grange Jubilee and Agr'l Ass'n	286	5	36	36	35	157	555	77	77	7	.	108	640	23	.	71	1,680
Grange Jubilee and Agr'l Ass'n	69	.	43	32	15	25	189	50	154	120	1	183	58	12	23	.	791
Grange Jubilee and Agr'l Ass'n	50	.	35	15	25	50	181	25	36	30	2	50	200	50	100	.	432
Grange Jubilee and Agr'l Ass'n	62	2	45	44	32	37	250	.	161	151	.	270	23	41	24	.	1,109
New Carlisle and Farmers' Union	56	.	20	12	20	50	158	.	100	95	6	75	175	40	60	100	809
Northwestern Indiana Agr'l Ass'n	170	1	74	97	42	137	521	91	192	295	.	475	892	126	618	.	3,110
North Manchester Tri-County	274	10	100	52	109	132	777	210	135	25	.	40	23	157	.	3	2,040
North Salem Agr'l and Hort. Ass'n	306	5	65	41	81	110	600	20	215	146	.	161	105	15	50	.	1,313
Poplar Grove A., H. and M. Ass'n	204	23	80	60	41	163	508	16	221	23	.	77	47	117	.	.	1,053
Remington Fair Association	190	1	20	27	31	85	354	.	56	74	.	136	221	49	.	.	906
Sheridan District	336	14	28	49	36	67	609	16	199	94	4	98	88	28	60	.	1,169
Switzerland and Ohio Agr. Society	214	13	48	51	37	52	420	83	88	102	.	125	229	28	124	.	1,199
Warren Tri-County	374	7	64	62	61	161	749	90	163	150	25	500	198	135	309	50	2,374
Wayne, Henry & Randolph	212	2	36	86	55	156	547	29	182	15	4	113	129	90	36	.	1,085
Xenia Union District	165	18	69	80	52	175	559	41	80	20	5	30	160	22	2	.	919

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA.

EXHIBIT OF AGRICULTURAL SOCIETIES.

403

PREMIUMS PAID.

NAME OF SOCIETY.	PREMIUMS PAID.															Total.
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Field and Farm Products.	Horticulture.	Bees and Honey.	Domestic Skill.	Textile Fabrics.	Fine Arts.	Miscellaneous.	
India	\$4,591		\$1,320	\$566	\$779	\$412	\$7,688		\$479	\$729			\$1,281	\$43		\$10,200
Adam	1,596	\$16	307	72	198	109	2,263	\$6	28	43	\$44	\$97	126	56	\$199	596
Boon	130	10	51	18	23	9	301		29	2		44	26			2,904
Cerro	1,148	21	487	110	155	108	1,450	6	57	41		71	121	43	30	430
Clink																2,441
Davies Co. A.	522	92	260	101	138	154	1,267	38	54	29	8	139	134		27	1,088
Delaware Co.	537	80	312	182	186	127	1,574	185	136	90	10	54	184	68	60	2,111
Decatur Count	1,009	59	230	92	197	90	1,577	28	38	29		46	77	53	187	2,078
Elkhart Count	299		198	35	68	6	597	74	48	29		16	230		27	1,088
Fulton County	427		153	44	63	12	689	25	42	15	3	25	25	8	54	886
	560	110	390	80	185	75	1,400	200	105	175	10	185	200	125	50	2,520
	596	34	186	84	64	65	1,280	92	44	29		53	65	98		1,532
	1,112	15	407	117	238	198	2,017	104	75	18	18	43	183	81	41	2,567
	620	70	254	78	215	43	1,480	65	80	70		108	65	45	85	2,000
	730		286	105	130	109	1,360	66	35	48		19	214	76	76	1,963
	905	20	580	210	226	100	2,051	100	193	60	313	110	312	96		2,359
	498		278	90	237	69	1,158	114	213	146		207	368	39		3,233
	429		112	46	20	14	622	56	14	31			76	41	136	2,257
	839		127	32	71	12	1,081	14	42	9		11	84	25	34	1,300
	715		160	89	128	23	1,115	65	27	37	14	74	49	66	70	1,518
	764		109	280	79	138	1,321	90	76	78	20	45	150	68	16	1,834
									30	15		32				72
Monroe Co. Agricultural Soc'y.	177	8	54	46	37	19	344	3	48	24		26	45	28	21	541
Montgomery Co. Agricultural Soc'y.	3,320	30	1,210	320	412	300	6,032	173	206	125	40	125	173	80	50	7,067
Newton County Agricultural Ass'n.	516	11	27	38	37	60	271	15	9	105	6	18	20	8	61	909
Noble County Agricultural Soc'y.	961	6	358	66	107	85	1,536	40	38	15		22	153	75	5	1,889

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA—Continued.

PREMIUMS PAID:

NAME OF SOCIETY.	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Field and Farm Prods.	Horticulture.	Bees and Honey.	Domestic Skill.	Textile Fabrics.	Fine Arts.	Miscellaneous.	Special.	Total.
Owen County Agricultural Soc'y.	\$1,117		\$191	\$87	\$110	\$75	\$1,532	\$35	\$47	\$19		\$67	\$34	\$71	\$27		\$1,714
Parke County Agricultural Soc'y.	536	\$47	124	42	67	30	848	1	74	52		64	69	25	114		1,854
Pike County Agricultural Soc'y.	900	50	121	52	144	30	1,278	38	75	43		110	123	28	16		1,249
Posey County Agricultural Soc'y.																	1,652
Spencer Co. Agricultural Soc'y.	657	23	156	81	124	25	1,118	5	35	11	31	32	67	9			1,296
Spencer County Fair Association.	261	15	185	109	115	11	898	26	6	17	2	48	18	7	25	\$81	903
Stauben Co. Agricultural Soc'y.	2,068	89	404	191	243	170	3,185	135	99	79		63	154	32	118	150	4,913
Sullivan Co. Agricultural Soc'y.	1,589	72	369	86	259	144	2,539	159	157		7	81	235	66	9		3,364
Spencer Co. Agricultural Soc'y.	781	59	157	30	50	14	713		49			74	106	26	457	5	1,313
Spencer County Fair Association.	256	34	120	23	44	29	509		54	3	1	102	32	32	15		1,392
Stauben Co. Agricultural Soc'y.	204		250	186	106	45	791	23	72	45		92	122	49	33	495	1,692
Sullivan Co. Agricultural Soc'y.	508	30	368	92	75	51	1,122		74	35	5	105	98	24		17	1,511
Tippecanoe Co. Agricultural Soc'y.																	
Tipton County Fair Company.	798	8	194	122	91	72	1,283	57	46	1		63	166	25	31		3,750
Vermillion County Ft. Stock Soc'y.	1,057	24	156	40	66	33	1,377	12	25	12		42	34	27			1,686
Vigo County Agricultural Soc'y.	2,314	39	422	127	245	245	3,394	95	131	67		126	217	83	113	350	4,578
Warrick County Agricultural Soc'y.	944	98	162	96	185	33	1,470	34	63	24		104	109	23	2	40	1,843
Wayne County Agricultural Soc'y.									6			4					34

DISTRICT AGRICULTURAL SOCIETIES.

[illegible]

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA.

NAME OF SOCIETY.	RECEIPTS.				DISBURSEMENTS.								
	Admission Fees.	License Fund.	Entry Fees.	Privileges Sold.	All Other Sources.	Total.	Improvements.	Premiums Paid.	Expenses of Fair.	Rent, Taxes and Incidentals.	Dividends, if Any.	Balance.	Total.
Indiana State Board	\$21,386		\$1,372	\$4,359		\$46,103	\$1,973	\$10,200	\$3,497			\$6,968	\$39,114
Adams County Fair	892		502	226	927	1,146		585	529			20	1,146
Boone County Agric	4,064	\$20		731	681	5,966	1,500	2,304	945			647	5,968
Carroll County Harb. and Assoc.	1,002	17		182	294	1,497	102	430	318	945			1,497
Clinton County Agricultural Society.	3,948	30	227	715	212	5,033	1,316	2,441	1,199	143			5,101
Davies County Agricultural Society.	2,361		420	1,203	485	5,070	565	2,519	506	643		836	5,070
Decatur County Agricultural Society.	2,036	15	823	342	94	3,272	51	2,078	704	333		103	3,272
Delaware County Agricultural and Mech. Society.	3,568	50	83	610	60	4,373		2,111	560	468	\$906	328	4,373
Elkhart County Agricultural Society	2,363	65	475	452	456	3,812	378	2,328	941	28		136	3,812
Fulton County Agricultural and Mech. Society	1,308		111	169	107	1,696	496	896	246	228			1,870
Gibson County Agricultural Society	4,525	15	64	689	709	5,983	1,322	2,520	839			1,909	5,983
Greene County Agricultural Society	1,112	15	341	286	367	2,141	300	1,542	200	25			2,057
Harb. and Association.	3,201		402	1,057	616	5,276	47	2,587	1,247	1,285		110	5,278
Harrison County Society	3,182	15		958	17	4,351	200	2,000	1,036	34		1,076	4,351
Hen	2,670	22	79	579	2,375	6,725	300	1,953	968	2,571		32	6,725
Hendricks County Society	3,137	77	75	787	385	4,462	422	2,359	1,289	75	240	76	4,462
Indiana Agricultural Society	4,712		303	976	976	6,082	900	3,233	723	648		1,178	6,082
Ind. Joint Stock Co.	4,071	10	435	430	247	5,214	771	2,257	328	674		1,182	5,214
Jefferson County Society	574	20	186	61	1	814	40	733	214				887
Agricultural Ass'n	1,977		804	181	229	3,282	75	2,289	449	182		305	3,282
Lake C													
Laport	1,314		244	278	92	1,928	19	1,300	318			291	1,928
Madison	1,315	45	312	243	219	2,327	114	1,518	482	51		159	2,327
Marion	3,394	10	325	462	396	4,590	341	1,864	1,566			608	4,590
Monroe		132			75	207		72	40	35		60	207
	862	20	127	37	166	1,204	163	541	416	105			1,204

Montgomery County Agricultural Society	6,440	162	1,200	960	1,890	10,642	500	7,067	650	65	. . . . .	2,360	10,642
Newton County Agricultural Association	1,228	. . .	193	376	54	1,851	. . .	969	408	400	. . . . .	74	1,851
Noble County Agricultural Society	2,451	95	96	315	4,213	7,177	2,887	1,899	632	1,367	. . . . .	380	7,177
Owen County Agricultural Society	1,796	20	516	145	1,735	4,213	866	1,714	520	1,151	. . . . .	. . .	4,252
Parke County Agricultural Society	2,123	15	226	674	405	3,245	84	1,854	3,231	115	. . . . .	14	3,245
Pike County Agricultural Society	1,449	25	288	790	432	2,986	400	1,249	1,000	239	. . . . .	97	2,986
Porter County Agricultural Society	1,857	155	372	. . .	237	2,623	. . .	. . .	2,215	107	. . . . .	299	2,623
Posey County Agricultural Society	1,494	55	197	1,636	361	3,744	385	1,692	1,185	. . .	. . . . .	481	3,744
Putnam County Agricultural Society	1,980	195	216	102	3,372	5,667	3,938	1,296	368	60	. . . . .	3	5,667
Ripley County Agricultural Association	1,574	. . .	140	360	. . .	2,074	600	908	210	. . .	. . . . .	355	2,074
Rush County Agricultural Society	3,936	35	317	780	1,733	6,829	310	4,913	1,111	363	. . . . .	130	6,829
Shelby County Agricultural Society	3,953	35	472	1,169	420	6,448	814	3,364	910	659	. . . . .	649	6,448
Spencer County Agricultural Society	1,449	38	262	370	677	2,798	83	1,313	317	420	. . . . .	652	2,798
Spencer County Fair Association	1,461	. . .	285	106	393	2,245	. . .	1,392	407	24	. . . . .	420	2,245
Steuben County Agricultural Association	1,929	. . .	. . .	353	608	2,891	400	1,692	380	253	. . . . .	163	2,891
Sullivan County Agricultural Society	2,198	. . .	335	253	434	3,221	155	1,511	600	834	. . . . .	120	3,221
Tippecanoe County Agricultural Association	4,800	. . .	. . .	1,009	411	6,220	400	3,750	659	. . .	. . . . .	1,411	6,220
Tipton County Fair Company	2,939	361	84	283	12	3,481	100	1,686	680	1,200	. . . . .	14	3,681
Vermillion County Joint Stock Society	1,631	. . .	411	130	78	2,251	215	1,532	600	193	. . . . .	. . .	2,570
Vigo County Agricultural Society	6,709	127	1,647	851	1,948	11,282	989	4,578	1,560	3,737	. . . . .	416	1,282
Wabash County Agricultural Society	3,276	. . .	947	802	19	5,045	. . .	. . .	. . .	. . .	. . . . .	. . .	. . .
Warrick County Agricultural Association	1,783	15	587	178	700	3,264	57	1,848	610	672	. . . . .	76	3,264

DISTRICT AGRICULTURAL SOCIETIES.

NAME OF SOCIETY.	RECEIPTS.					DISBURSEMENTS.							
	Admission Fees.	License Fund Received.	Entry Fees.	Privileges Sold.	All Other Sources.	Total.	Improve- ments.	Premiums Paid.	Expenses of Fair.	Rent, Taxes and Inol- dentals.	Dividends, if any.	Balance.	Total.
Acton District Fair Association	\$387		\$105	\$158	\$420	\$1,072	\$208	\$398	\$443	\$88		\$40	\$1,072
Arcadia District Fair	393		5		272	676		220	456				676
Bridgeton Union.	1,129	\$25	121	212	1,590	3,074	1,423	1,083	395	40		195	3,074
Eastern Indiana Agricultural Association	6,340		470	1,456	257	8,525	868	4,072	1,132	737	\$1565	150	8,525
Fairmount Union Joint Stock Agricultural Ass'n	2,579			380	680	3,640	97	1,862	861	193	480	112	3,640
r'l Ass'n	2,749	40	680	384	4,132	7,987	5,481	1,803	460	121		121	7,987
	612		177	75	80	925		662	225	16		22	925
	2,477		256	601	69	3,405	225	1,786	911	182		300	3,405
	389			35	76	510		197	100	3		210	510
						975			725	9			975
n.	488	62		112	120	780	13	394	243			136	780
	636			91	170	798	28	300	867	82		20	798
	2,519	85		610	544	3,708	358	1,778	1,375	152		46	3,708
	6,724	34	1,627	2,151	1,930	12,467	200	5,696	3,776	286		2,808	12,467
	3,700		982	524	198	5,403	85	3,141	1,050	1,128			5,403
Iarl Ass'n	1,531		12	178	200	1,922		1,386	421	74		90	1,922
	1,376		179	368	40	1,962	31	1,028	314			588	1,962
	1,559		450	350	299	2,658	700	1,900	300	46		12	2,658
				180	1,505	1,685	274	961	40	104		254	1,685
	2,166	15	377	355	218	3,135		1,918	360	326		687	3,135
Society.	3,010		455	555	397	4,419	163	2,519	684	516		555	4,419
	736		71	126	102	1,062	40	1,049	287	6		40	1,062
	1,433	377	236	92		2,138	124	268	510			284	2,177
Western Union Agricultural Association													

SOCIETY OF AGRICULTURAL SOCIETIES.

SHORTHORN BREEDERS.

The State Shorthorn Breeders' Association met in the Lecture Room of the State Board of Agriculture, January 22, 1890, at 2 o'clock P. M., and was called to order by President J. A. Buckles, of Muncie.

Judge Buckles. I will say at this point that the regular order of business is the address of the presiding officer, but the first thing in order will be dispensed with, for the reason that the address is not ready. Therefore, we will hear the reports of the other officers. The Secretary will read his report.

The report of Secretary H. C. G. Bals was read, and in conclusion he stated that he had a report from the Treasurer (who was unavoidably absent), who sent in \$3.65 as the balance on hand. The reports were received, approved and recorded.

Chair. If there are no reports from standing committees, the next thing in order will be reports from select committees; and in that connection I want to say that there was placed in my hands this morning, by a committee appointed some time ago, a note from Mr. Harper saying that it would be impossible for him to be here, and he returns the papers without a report on the matter. This matter was referred to the Association before, and by this Association again to the committee, and this committee has reported it back to me. I suppose that unless some other disposition is made of it, or desired to be made of it, that it will be the proper thing to report it back again for disposition. What is the pleasure of the Association upon the subject?

Mr. Sankey. Mr. President: I will ask if the rest of the committee are not here and ready to report on the subject.

Chair. We will hear them, but I don't know who constitutes that committee.

Mr. Bals. This committee was evidently appointed two years ago, and I don't know, without reference to the reports of that time, who they are.

Chair. What is to be done about this committee matter? Shall that matter be recommitted back?

Judge Martindale. I don't think anyone here understands anything about what the matter is.

Chair. I don't care to say much about it; both parties are claiming that they can prove certain things, and I believe it is better to find what is in it before we take any action. It is claimed that one or two shorthorn breeders have dealt unfairly with certain others in the matter of transfer of some stock.

J. J. Paul. In order to expedite business, I make a motion that a new committee be appointed, a committee of three by the Chair.

Judge Martindale. I suggest that it be understood that the committee so appointed shall report to-morrow morning.

The suggestion was accepted and the motion carried unanimously.

Chair. The chair is now ready to announce the committee. I name as that committee: J. J. Paul, Joshua Strange and Judge Martindale.

Mr. Folsom. Mr. President: Before we commence these papers, I would move that if any there are whose names appear upon this programme, fail to present the same, that they have the privilege of making a fifteen minutes' speech upon any subject they wish to speak upon.

Mr. Bals. I move that the motion of Mr. Folsom be laid on the table.

The motion of Mr. Bals was voted down and that of Mr. Folsom prevailed.

Chair. Is there anything in advance of this programme? If not we are ready for the papers.

Mr. Lewis Moore, of Muncie, Indiana, here read a paper on:

"WHY FARMERS SHOULD NOT USE GRADE BULIS."

Nineteen years ago we bought of Mr. Wilhoit our first pure-bred bull. The reason we made this purchase was to improve our cattle. We had been using grade sires, and were selling our yearling calves at \$3 per hundred, which averaged 650 pounds in the fall, (they were one year old in the spring), thus realizing about \$19 or \$20 per head.

After using the new bull, and the same cows as before, our first lot of calves, at the same age, weighed 950 pounds, and sold for \$4 per hundred, or \$38, or nearly double what we had received before, for the same care, for the same room, in the same length of time, possibly a little more feed, and a superabundance of enjoyment not to be estimated in dollars and cents.

The heifers were saved, and in almost every instance made grand dairy cows, such as would sell to shippers or for family cows at from \$45 to \$60 per head, an advance of \$10 or \$15 on that of the dam; and all brought about by the use of a full-blood sire.

It was almost miraculous what grand calves these old "scrub" cows would raise, thus proving to our satisfaction, as the Breeders' Gazette puts it, that something "good could come out of Nazareth."

This experiment was not only a pleasure of commercial success, but the realization of an idea. I had advanced one step in the science of breeding.

Some of our neighbors patronized our bull. Often grade bull calves were saved and used as breeders. In many instances these calves would be as good individually as their sire. Then the tug of war set in to show our neighbor that he should not use a grade bull if his object in breeding was to "grade up" his cattle. He had heard that the great law underlying all successful breeding was that "like produces like." If that law be true, he would reason, "why not use my grade, which I have secured at a small expense, in preference to a high-priced pure-bred?"

He did not know that this law was not a law; that this truth was not a truth. He did not stop to think that he might search the realms of nature through and he would find no two atoms, no two leaves, no two branches, no two shrubs, no two blades of grass, no two animals, no two individuals, alike. If "like produces like," how, then, would there be such a thing as rising, "grading up," or progress in the art of breeding?

We had seen cattle that were superior to either sire or dam. Horsemen tell us that Axtel is a better horse than either his sire or dam. Sunol is a better mare than her sire is a horse or her dam a mare.

In the olden time it was said that the "iniquities of the fathers should be visited upon their children to the third and fourth generation." Now, what are some of the iniquities of this grade bull? His unpardonable sin is his bad blood. His dam was a scrub, his second dam and second sire were scrubs, his third dam and third sire were scrubs, fourth dam and fourth sire were scrubs.

Now, he is just as likely to breed after one of these ancestors, or an ancestor of an ancestor, as the other. He is a compound fraction, or a fraction of a fraction, and reaching out to the fourth generation we find at least seven scrubs near and dear to him to one of approved blood—seven chances to get what you do not want to one of getting what you do want. The law should be that "like produces like," or the likeness of some of its ancestors when the environments are the same. So, then, if the bull is good individually and all his ancestors for four or five generations are good like him then the chances, at least, are as one to two that his produce will be an improvement over the scrub or grade dam.

Our observations have convinced us that the best bred animal is the most prepotent, and what we mean by the best bred animal is this: An animal himself individually the best for the purpose for which he was bred and all his ancestors like him.

Mate a well bred brown Leghorn cock with a flock of dung-hill hens, and the result of the first crop will be like the male bird. Crop a well bred Berkshire boar on a common sow, and the pigs are more likely to have the characteristics of the sire than the dam. Breed a Merino ram to native ewes, and the lambs will be merino.

There was brought into our county, a few years ago, a Polled-Angus bull. His calves were almost the picture of himself, no matter with what kind of a cow he was mated. Some of his male calves were saved, and I can now show you some of the calves of a grade Polled-Angus. They seem to have lost the virtues of the "daddy," and inherited the vices of the "lady." The "Scotch" robustness is gone, the glossy black coats have turned to brindle, and they would need the bloody saw and barberous stocks of a half civilized person to render them hornless.

It is a truth, settled in the minds of all experienced and scientific breeders, that the law, that "like produces like," is largely affected by heredity, reversion, atavism, and many other things, over which the breeder has no control; but the safest, surest, cheapest and most speedy way to make improvement in cattle is by using pure bred sires, unless high grades with five or six approved crosses could be secured.

Mr. Warfield says: "It is a too well settled principle, and rests on too firm a basis, that animals that are part pure will, when interbred, revert to the inferior type, and so rapidly deteriorate, to need discussion." And he further says: "I do not think I am open to contradiction when I say that, in three crosses by really good bulls, the animals can in no way be distinguished from the pure-bred."

This being the case, what motive, then, can an ordinary farmer have in not using pure-bred bulls? Surely the price will not deter him from it. The time was when that might have been an excuse. Splendidly bred calves can be bought at from fifty to one hundred dollars. The grade will cost him twenty-five dollars. The care and keep of one is as great as the other. The extra value added by the pure-bred to fifteen calves will more than pay the difference between a pure-bred and a high grade.

If there ever was a time when farmers needed better cattle for which they could receive better prices, that time is now, when values have shrunk clear out of sight. Think of it! Isn't it lamentable when men will send two car loads of cattle to market with instructions to his commission men that after having paid himself, to remit the balance in two-cent postage stamps?

One of my neighbors sold a steer the other day that would be three years old in the spring, for \$40, guessing him to weigh 1,600 lbs. At these figures he realized \$2.50 per hundred. Surely the President ought to recommend Congress to vote this man a bounty, for I know he cannot live at such prices as these. Another neighbor sold six steers, the same age as the former, that averaged in Buffalo 1,740 lbs., and brought 5½ cents per pound which would be the same as 5 cents at home, or, after allowing for shrinkage, about \$90 per head. The railroads took one-fifth of the first steer to put him into market, while for the high priced bunch, they only charged one tenth.

Those who have watched the market reports, given in our leading papers, will find something like this: "The receipts for the month have been exceedingly heavy, the increase consisting largely of medium and common steers and old cows." "The supply of extra choice beeves and export grades has been moderate, and such have rated strong and higher, while common and medium grades have been in excessive supply, and have been very hard to put into money, at prices that were ruinously low."

To the man that had good cattle there was comfort, there was beauty, there was rhythm, there was poetry in such words, but to the man of "scrubs" there was no ray of hope.

The receipts of cattle at Chicago for the year 1889 were over 3,000,000, an increase of more than 400,000 over the year 1888. This is a partial explanation of the profound depression of the trade for the year just closed. Prices ran from \$1 to \$6.25 per hundred.

The ranges furnish one-fourth of the cattle received in Chicago. The cattle of our State, that ought to be housed in barns, and fed six months out of the year on high-priced feed, are brought into competition with these Texas and Western cattle, that have been raised on cheap lands, where grass is green the whole year round, where there is no need of expensive barns, tended by a cowboy that does not need more luxuries than his faithful Shepherd dog. Texas has been sending

forward \$15 to \$16 steers. There is an over production of this kind of cattle, and men that are raising this sort are meeting in conventions, and are trying to find out what is the matter with the cattle market; and they will lay the trouble all on the "Big Four," and will resolve that Congress ought to legislate them out of existence, when, in fact, the whole trouble ought to be laid on the "scrub" bull, for it is he that is causing all this trouble, and he is the one that Congress or some one else ought to knife.

When good cattle go forward, the "Big Four," and plenty of others, are looking for them, and are willing to pay big for them. Our county of Delaware, if called on to-day, can not furnish a car load of prime cattle, and this is true of too many counties in the State.

Every intelligent, enterprising and progressive farmer ought to make up his mind that the "scrub" must go, and that speedily; the "scrub" that pays no taxes, that has taken a mortgage on the farm, and is willing to help to raise it; the "scrub" that has four panaches more than it ought to have, that is both angular and triangular, that might be likened to an old crib builded over a bottomless pit, into which you might shovel, and shovel, and shovel, and still it would be empty.

And the way to make him go is to get the "scrub" out of the farmer, and after this is done there will be no longer any need for the "scrub" or grade bull.

DISCUSSION.

Judge Martindale. I know a great deal more about the scrub than I do about the other fellow. I do not think the question is one any longer open to argument; there is but one side to it, and the only thing, it seems to me, is a general diffusion of the knowledge upon the question. It is a recognized fact, both in the breeding of animals and of men, that you occasionally find running back, without any cause whatever—say back to some of the far ancestors—away back—you find this once in a while in families where the father and mother are both black-haired, and the child, one of whom will take a freak and run back to some great, great grandmother who was red-haired. Children do this, and so it is with calves. You can not tell from the color of the sire or dam what the calf is going to be—it doesn't always tell. They go back in color, run back in white and in roan; they get it from mahogany reds, both sire and dam, and they have roan calves; they don't get it from the immediate ancestors. They run back in their qualities as in their colors. It is a question of but one side, and there is no doubt in the world about it, that in breeding where there is scrub stock in the veins the calf is apt to breed back and be diminutive. On this theory is founded the register and the theory of our registry and the value of our stock and the rules that fix the value of stock. For example, I get a fine animal and I get a good judge to come and examine him; he is subjected to the register, and they say, "here is a cross," and I say, "what the thunder is the matter?" and they say, "something comes in here that has not a good pedigree," and the result is you take off of the value and there is not much profit in the animal.

The paper is a good one and it is one that ought to be disseminated. I don't know why it is—but it is illustrated in that paper—that a farmer will buy a half breed, or a calf that has no character in pedigree at \$25 and \$30, or as high as \$50, when \$75 or \$100 would buy a perfect animal to breed from. They see the \$25 at the time, but they don't seem to see that it runs through the farm product for years to come, and for this reason just such a paper as that ought to be placed under the nose of every man no matter what he is breeding for. I will illustrate that. My neighbor, who has a farm close to me, gathered twenty or thirty head of Shorthorns that were not grades; he fed them well, fed them faithfully, sheltered them during the winter, but he had to feed them four years, and after a full feeding for four years the average weight was only something like 1,200 pounds. I had at the same time some that were good grades, red in color, good in shape and in horns. I gathered them up at the stock yards, and I commenced feeding a year after he had commenced feeding. I fed my calves until they were three-year-olds, and when three-year-olds they weighed 1,640 and some odd pounds. I got \$20 more per head for my stock, and that, too, after they had had not more than three-quarters the feed that his had. Some men will persist in these things; it is an indifference; it is the same thing that will induce him not to shelter his stock in the winter; it is a haphazard way of doing business. I don't know that I have any specific remedy for this, any more than the application by them of the best modes and customs to get in the best possible condition their lands. The land in this country is too valuable to produce feed to feed animals that yield no profit. You have no right to complain if you persist in doing these things. There is no farmer but what is able to get a good bull and a little good stock. I think they ought to start in as soon as possible with a pure breed on the dam side. There are some things in the paper that I do not concur in; there are some things that would show that the calves are always taking after their sires. I think the dam has more to do with fixing the type of the product than the sire. If you ask why I will go through the government from the time of Washington down, and I will show you that there was not a President but that had a mother that was capable of occupying that place for him. You examine it. I want to say that wherever there is a man who has got snap and energy and vim, and who has succeeded in life, if you will go back you will find that he inherits it from his mother. I find it in my experience in breeding. I like the paper, and it ought to be published. It should be hammered into the farmers of Indiana that when they are breeding from poor animals they are wasting their labor—they are wasting their feed and their lands. They may as well undertake to produce good crops from clay land and from swampy land as to realize from poor scrub stock.

Mr. Folsom. While Mr. Moore's remarks seem to cover the field pretty thoroughly, "The Reason Why Farmers Should not Use Grade Bulls," the paper suggests another point which has been too much overlooked by Shorthorn breeders, that is: Why the farmer should use pedigreed stock. It is a fact that the majority of breeders, if they have an inferior cow—one not fit to breed, or not fit to head a herd—if it is not genuine they will sell it to a farmer for some price, or any price. It seems to me, Mr. President, that this is all wrong. He is injuring the cause, as a breeder, in taking that course. They go upon the theory that it is better than

a "scrub." Perhaps, directly, it is better than the scrub, but so far as an educated breeder is concerned, it is not as good as a scrub. Mr. President, were I on a stock farm, and would come to you to buy a bull, and you would sell me a "tailing," that had been bred up in pretty good shape, not of pedigree stock, and there is next to me a farmer who has no pedigree stock, has a scrub bull in his lot, and finds that I have a good bred bull. He waits a little while, perhaps, to see what the outcome will be. The stock that results may be a little better, but to the uneducated eye it is not discernable. We look too much to the source, we compare too much to the sire, we see no improvement. My neighbor on the other side of the fence does not feel encouraged to buy a Shorthorn bull. Suppose on the other hand, you had sold to me an ideal shorthorn, and I had taken that bull home with me, that would have been an educator when compared to the "scrub" bull on the other side of the fence. The quality of the calves next year would be good enough to convince him. He would feel encouraged at the result, and he then tries to buy a little better bull than I have. But the fact that the pedigreed stock is sold by the farmers because it will bring a little more than the scrub, I think is all wrong. We must introduce the pedigreed stock. He should no more buy a pedigreed scrub than he should buy a grade bull.

R. H. Phillips. There is one thing that has impressed me in the reading of that paper, and that was, the sire, or the bull, is half the herd. It is undoubtedly cheaper to buy a bull worth one hundred dollars, than to buy a bull worth twenty-five dollars. I have tried both Shorthorns and scrubs, and brought Shorthorns to this market that brought me one hundred and nine dollars, or something like that, per head; and before that, I raised scrubs, and kept them until they were three years old, brought them to market and didn't get quite forty dollars for them, and I had to beg the buyer to give that. I think that is, perhaps, a little more than ordinary, though.

Mr. Marlott. I find that for the two years that I have been using the knife on my scrubs, (that Mr. Folsom speaks of), the result has been very satisfactory. By doing that you have no trouble in selling the better ones at a reasonable price. I think it is an excellent paper. I have sold yearling calves that have brought me over fifty dollars, and scrubs at the same age would not have brought me over twenty dollars. I think that, possibly, we ought to use the knife more than we have been doing.

Mr. Bals. Mr. President, I am sorry to say that I have no essay prepared on the subject assigned me. I have here a paper from Mr. Heagy, who, on account of illness, can not be here. He has a postscript here that I will read first.

The paper of W. D. Heagy was read by the Secretary:

"CARE OF BULLS FROM BIRTH TO TIME OF SELLING."

I shall merely open the question for discussion, hoping that much important knowledge may be gained through an interchange of ideas on this important branch of the Shorthorn business.

The first question that presents itself to my mind is the time of sale, but will take it for granted that the author of the question would consider the time of sale to be from twelve to eighteen months after birth.

The first thing in my judgment necessary is a good cow, well fed, enabling her to give plenty of milk, allowing the calf free access to its dam for two weeks after birth, afterwards keeping it in a roomy box stall, and allowing it to the cow twice per day, and giving it all the nutritious food it will eat, such as shelled corn, oats, bran, and well-saved clover hay (which, by the way, he will soon begin to eat). As soon as he has learned to eat, I am ready to teach him something else, that is to lead. I give him to understand that a bull requires a master, but do not treat him harshly, or he will become stubborn, (and a stubborn bull is equal to a stubborn mule.)

At first be gentle with him; as he becomes older he will be ready for harsher treatment, if necessary, but if properly handled will not need it.

As soon as the calf is three or four months old, if you want to make a good breeder of him, he wants more exercise than a box stall affords; then I turn him in a lot (on grass if in summer time), for exercise; but never turn more than one six-months-old bull calf in the same lot at the same time, unless you have a better way of putting on flesh than I have. I think the time to wean him is when he is four or five months old, providing he has been properly cared for. I have reference to raising breeding bulls. I do not think it a good plan to confine calves, and put them in show condition, when wanted for breeding purposes. In conclusion, would say that in my judgment calves thus treated would be ready for sale at the age named, and the buyer feel safe in getting a breeder.

DISCUSSION.

Mr. Strange. It throws us in a little awkward position to discuss a paper in the absence of the author, on account of being unable to ask him any questions, but I must agree with him in the advice given for the rearing of young bulls for breeding purposes. I think that they should have freedom every day from the time of birth on down, even if they do not get as much flesh on them as they otherwise would. They should exercise in the open air generally, and should have such feed kept before them as will produce muscle, say corn and a little oats, and a little oil, not much oil, and give them free exercise and plenty of milk, the milk regularly. It is important to the breeders that proper care should be taken for this reason in breeding bulls. I have experienced a great deal of trouble in my short life in breeding thoroughbred cattle, in having sure, regular breeders; that is, that I could produce calves regularly, annually, as I desired to produce them. It is too often on account of the sire or cow that shy breeding would exist. Sometimes I think the difficulty existed in the cow or heifer, and sometimes I think it existed in the bull, and thereby I have suffered considerable loss in my herd from shy breeding. I kept a bull until he was six years of age, until he become a regular breeder, and instead of getting better he got worse, and scarcely ever got a calf at all. I would say this, that the indications about the animal were too effeminate, too fine, too fine about the head, and I am inclined to think this, that we should not object if they were pretty strong about the heads or horns, or at the root of the tail, as that indicates a good, strong backbone in them. There is another thing that has injured the breeding quality of our Shorthorn bulls, I mean inbreeding,

or extensive over-feeding, which might be transmitted from one generation to the other. We find in the science of breeding that at times inbreeding has been done to almost incestuous breeding, and it has come down for many generations, and has hurt the vitality of the animal. I am impressed with the fact from observation and experience, that continuous heavy breeding, while it may not produce entire barrenness, will produce shy breeding in an animal. That will result as a loss in the herd. You cannot regulate the time of having your calves to come on account of the uncertainty of your animal. It is a question of great interest, and I am sure that on the other the difficulty is equally important. I say that I have tried to ferret out the cause of these things, but so far I have been unable to do so. I have observed, also, that in some of my own females they start in with the very difficulty that exists in the male to produce the results I desire, in trying to fix the time for the calves to come, and I have not been able to ascertain where the cause chiefly lies, and as a result I have suffered considerably from it.

DISCUSSION.

Samuel Purcell. I have had a little experience by keeping a Shorthorn bull, for several years, and I find out that feed has a good deal to do with it; that is, causing cows not to come with calf. Let the cow run on clover or feed her clover hay as part of her feed and you will find it more difficult to get calves than in feeding oats or letting her run on blue grass. This was my experience, and I found the same thing to be the case with my neighbor's cows. There is no difficulty in feeding blue grass. By making the change I found they came around all right. It wasn't the fault of the bull.

Mr. Strange. My pasture is blue grass and timothy hay. This winter I am feeding clover hay and timothy hay mixed. Mine were on blue grass fields, and the sire not in an overfed condition. I am not a good enough feeder for that; but when I want to market them I keep them in good condition. It does not relieve me a particle. If anybody has anything to offer that will relieve me from that difficulty I would like to hear it. I have suffered considerable loss on account of shy breeding.

J. D. Spahr. I was going to relate a little experience in regard to breeding. I have had no trouble whatever with my females; I keep them right well—not so fat as some, but I let them run on clover as well as blue grass, and I have had no trouble whatever. I bought one bull, a bull that came from Kentucky, that was strongly inbred, that proved to be a failure in the breeding line. He never got a calf. I think it may be attributable in some degree to inbreeding. I know he was strongly inbred, and he never got a calf. We kept him until he was two years old. I never raised a shy breeder in my own individual herd.

J. W. Leavelle. The gentleman has spoken of clover as perhaps being the cause of his cows not getting calves. I keep at home from twenty-five to thirty cows; our pasture is clover and blue grass, and our feed in winter is clover hay; as for dairy purposes we find clover the best feed for dairy cows. We have never had trouble with getting our cows with calf when we have good sires. In regard to bulls not being sure breeders, I will say that wherever I have met with this sort of a bull, I have found that he was used too much when young, and perhaps overfed

with too much corn. I think that the majority of those that are not good breeders have been abused too much in that particular. I have had some trouble with my heifers more than with the cows. I don't think the clover has anything to do with it.

Mr. Purcell. I did not say positively that the clover was the objection, I only said I thought it was. But I still think it is. [Laughter]

Judge Martindale. This is certainly a good subject, and the paper is a good paper. It is short, but it states in a succinct and proper manner the question; that is, "The care of bulls up to the time of sale from birth." There is one thing that I would like to impress upon my Shorthorn friends that I am thoroughly convinced upon—I may be deceived—and that is the handling of bull calves. Now, the care and handling, as we see them coming into shows—well, you will notice that they are kept at a distance. Our friend Christian brought one from Kentucky, and his man and the bull, I believe, had a fight, the man using a pitchfork, and I believe, too, that the pitchfork finally got the better of it. [Laughter.] He had a very vicious animal. Now, I think this matter is wholly a matter of training. I don't care what you say about it, it is a fact. I think it should be instilled into the minds of the keepers, that whether the bull is a kind and docile animal or a furious and dangerous beast, is the result of the treatment he has received when young, the manner of his handling when a calf, whether it has been rough or pleasant. Take the average treatment of a bull. He is slapped into a box stall, and the man goes in exhibiting an unfriendly disposition towards him, treats him as if he expects harsh treatment in return. You take a bull when he is a calf, and have his keeper handle him gently and pleasantly, as if he understood him, and at the same time not exhibiting fear or expecting anything, and the result will be surprising. You can handle him easily, and, gentlemen, there is no question about it. I read an article in the *Indiana Farmer* some time ago, in which the author said that you never could tell what the bull would do from his appearance. We read now and then of a man being gored to death by a bull, but I do not believe there is a case on record of a bull that was brought up in a pleasant way that would attack and kill a man, if he had not been vicious before. They are much like a mule; they are very smart; in fact, they know when you are treating them kindly, and when you are afraid of them. If you have treated them kindly, they will not mistreat you in return, and you need not be afraid of them. If, on the other hand, you mistreat a bull by punching him with a pole and other treatment of a like character, he takes up the fight, and says: "I will take a hand in this, too." [Laughter.] You can have a kind-dispositioned animal just in proportion as you treat him with kindness. If they are handled kindly, I believe the time will come when you need not put on a long pole and show them in that condition. I have known of cases where bulls have been reformed; and it is an easy thing, if in the start you commence by kindness. That one point I want to impress upon you, and the more you study it the more you will take to it. Why, you take an animal—take a man who trains an animal—you have seen him driving a horse along the street without any halter or other harness, and without any trouble whatever. I was in Denver some time ago, and I saw a drive where everybody has the free use of the road, and I saw after supper a man going down that drive with a pair of steers, and of all the trotting I ever saw it was there. Everything got

out of their way, and they had a clear track [laughter], and they took the race. [Renewed laughter.] It is worth your time and attention to give kind treatment to bulls, and if they have pleasant handlers during their early life, it has a good deal to do with their value when you get them raised.

Mr. Christian. I did not intend to say anything on this subject, but as Judge Martindale has brought my name up in this connection, I will say this: We bought that bull for a mere song, because he could not be handled; he was very bad, and I believe that almost all of Amberson's bulls were bad. He kept them in an oak stall. The darkey would go (I don't know that he ever went in there) in and drive them out to water. When I bought the bull, my son was there, and he was going to get a colored man to bring him home, but he would not let him, and he brought him in here himself—came up on the cars, and I said, I will let my herdsman drive him up; and he said "no;" and he took him out there himself. Then I showed him where I was going to keep him, and he said, "you won't keep him there very long." The paddock which I had built wasn't very strong, so I turned him out, and the next day after I went out, he just walked up to the fence and threw it "every which way." My herdsman wasn't used to him, and couldn't handle him, and consequently he had to take a pitch-fork to bring him in. Then I nailed the boards on the inside, but he went through it again and made kindling wood of it. Then I got some barbed wire and put in the new paddock, and I dug a hole in the inclosure and put a post in for him to butt against, and now my man can go into that paddock and catch him. That is the way I treated that bull, and he is a five-year old bull. Amberson's herdsman before that was leading him, and the bull got him down and would have killed him if some one hadn't come to his assistance.

Mr. Strange. I wish to call your attention to one particular point—a point that they didn't quite bring out about the bull calf, and caring for him. I want to impress your minds with that. Perhaps I have not said why I give the bull calf liberty from the beginning. You confine a bull calf, and I don't care how civil he is, he is sure, when penned up, to become dangerous. If you keep him confined for quite a while, in a playful way he may injure or kill somebody. If you give the bull calf plenty of exercise, and he doesn't get into this playful way, he is not dangerous. The restraint is what does it. I have found it unnecessary to confine them, but I have found it necessary to give them plenty of liberty. I handle them like my horses. I go out where bulls have got together through the gate, and by commanding them, I would separate them, even without a stick. I always give them exercise. In our county we had a man killed by a perfectly gentle calf. But he took that calf out of confinement and led it through the gate, and he turned on the man and threw him into the air with such force that his neck was broke. It was done in a playful way.

The Chair. The next thing is a paper, "Why Breed Shorthorns," by Hon. Robert Mitchell. I am requested to say for Mr. Mitchell that his health is such that he is unable to be with us to-day.

Mr. Strange. Would it not be well for the chair to appoint somebody to take up this discussion, and not pass it by? The time is passing rapidly. I suggest that Mr. Robbins take up this question and discuss it.

Mr. Robbins. Inasmuch as I am called on to speak on this question, I would say that we breed Shorthorns because we think they are the best cattle in the world. (Applause).

Mr. Marlott. I have been breeding Shorthorns for the last eighteen years. I commenced in 1870, and I bred them in the first place for the money that was in them, because I thought they were the best kind of cattle to breed, the right kind of cattle to get the money readily out of. I breed from ten to fifteen calves—sometimes as high as twenty, and I have generally had pretty good sales for them—at least, I sold them all—most generally at private sale, but I had three or four public sales, and I will say that my public sales in the main were a success. There is more money in Shorthorn cattle, I believe, than any other—more than in the Herefords. There are few, if any, that outdue them. I have sold as many as five bulls, and some years as many as twenty-four, and as far as that question is concerned, and we have handled bulls all our life, we have never had but one cross bull, and that bull when I got him (I bought him at Bloomington, Illinois,) was two years old, and I could lead him with my finger. I never had any trouble with that bull until I was called away from home, and I heard that in my absence the herdsman took a fork and fought him. I do not think there is any need or danger of them being cross if handled right.

Mr. Miller. I have been raising Shorthorns for some years. I first began about ten years ago, but having an accumulation of pasture and grass that needed to be consumed by something, I bought various calves throughout the country, the best I could buy, and pastured them off, and I found them to be different. Some of the calves would have some portion of the Shorthorn blood, while others did not show it, and I found that in keeping them until a two or three years' growth had been reached that there was more money in the Shorthorn blood. I forget how many I got in all. I aimed to get fifty of yearlings, and I think I got twelve head of pretty fair yearlings, and I had to pay the men their price. I passed by a great many calves, and when I saw I could not get my number I went back and bought the others and I kept them until they were over two years' old. Twelve of them had come from Meredith's herd; these weighed about 1,600, and the others would weigh from 100 to 1,200, and the better ones brought about one dollar more on the hundred, and they were fed on fodder and other feed. I found the lighter ones went over the feed and didn't take to it with the same relish as the others—the heavier ones. I went down into Henry County and bought twelve heifers. I wasn't looking for pedigrees, and commenced to breed for practical purposes. Since then I have purchased some registered cows and have sold a few calves as breeders. I don't sell them until they are ten or twelve months old. I use the knife and make steers. In good cattle there is but little money, I have found, and poor cattle will break a man up. I should have first said why I first commenced breeding Shorthorns. In visiting the fairs—there's where you see the choice animals—and having carefully looked down through the stalls, asking the points about different ones, I said: "Gentlemen, the Shorthorn is the first and foremost for a general purpose animal on the farm," and I made up my mind right there about them. I have noticed that some say that the Shorthorn must go, that the Polled-Angus are better. I have a few grade Shorthorns and some Polls.

I like the red Polls. Don't understand me that the red Polls are best—they are good. I believe that the red Polls will make flesh faster than the Shorthorns; I believe there is a little more profit in them. I only know this from keeping animals for practical purposes; they seem to fiesh a little faster, have a mellow feeling, and altogether it proves to me that they are an economical cattle for the farm.

Judge Buckles. As we seem to be getting along a little more rapidly than the time calls for, with your permission I will talk a little on the subject. If I find anything as I go along, that interests you, I will put it in. It is an important question. The man upon the farm must of necessity exercise a little, practical horse sense as well as industry. In other words, there are certain things that, if he would be successful, he must learn. First, what to do; secondly, how to do it; thirdly, when to do it. Now, when he has learned these things and is able to put them into practice, he will make money, if anybody will, at that business. I had that thing in view when I commenced breeding Shorthorns, a number of years ago. I went to work upon the question of what kind of cattle I should breed? and I investigated the matter to the extent of my ability at the time being, and I came to the conclusion that the best thing for me to do was to breed Shorthorns. (Applause). I went at it, and the war came on and I went into the sheep business. When the war was over I went back to Shorthorns, and I have been breeding them since for the simple reason that after making the investigation and experiments as I did, I became thoroughly satisfied that it was the best thing to do; I was also convinced that the Shorthorn was also a good milker—the Shorthorn can be made equal to any other milker. As a race now in Indiana, she has not had that care she should have; but all things being equal, she can be made the equal of any other cow as a milker. My experience has been, from the limited trials I have made, that the Shorthorns will make a little more and a little better quality of milk from a given quantity of feed and care than any other breed I ever knew of. Now a cow for beef purposes is a machine. She manufactures out of our corn and clover, beef. It is not because she is a cow that we raise food for her and feed it to her. When we raise the wheat we want to know what mill within our reach will make the most flour out of a given quantity of wheat? When we ascertain that, we go to that mill. It is so with the cow, she is simply a machine into which we pour the product of our soil to manufacture beef which we may put upon the market. Then the question comes: Will the Shorthorn make as much or more beef, and a better quality, than any other animal, out of a given quantity of feed? It is my experience that she will. This is why, I, as a practical farmer, would breed Shorthorns. Another reason is, they can be converted into beef at any age. You may take a Shorthorn, and in two months it can be used for eating; at six months it is the same and at twelve months the same. Just the other day I found that I had some cows that had lived too long for breeding purposes. I fed them up for breeders, hoping they would breed, but they would not, and did not, and a fellow came along and wanted to buy them and made me an offer of some kind per pound, but I said "no, you can't have them at that price." I told him he could take them at four cents a pound. One weighed 1,700, and it weighed it simply by having been on grass all summer, and on pretty short grass at that, until New Year's day, without any other feed. You can not do any better than that with any other cow

you can find. You can not do any better, and I doubt if you can do as well with any other breed of cows. I haven't been able to do as well with any other, at any rate. I would breed Shorthorns because I like them better. I like the looks of them, there is something in their faces. It does them so much good to have a kind word, kind treatment; it does them so much good to be satisfied that the party taking care of them is interested in their welfare. I remember a year or two ago that my son-in-law, then my partner, we had a herd of cattle there, and he was fixing up some cattle for the fair, and one of them was inclined to be a little unruly, and my grandson said "that calf will hook," and I said "I guess not, what makes you think so?" He said, "well, I went in there and led it out and it wanted to hook." I said to him, "now you go in and treat him nicely and see if he don't want to kiss you." I thought no more about it until I was down there again, and he walked up and made signs to kiss him, and, will you believe it, that bull-calf just stuck his mouth up into the boy's face.

There is no class of cattle, I take it, that is more susceptible to being influenced by kindness than the Shorthorn. They make a better quality of beef, in my judgment, than any other. I can not find any kind of beef so nice as a three-year-old Shorthorn steer that has been cared for properly—in a way to make the best kind of beef. I can not find in any other that fine and peculiar flavor that is characteristic of the Shorthorn. I would breed the Shorthorn for the economy in saving fences. My Shorthorn cattle sometimes knock a fence down, but a four-foot fence will keep them in. The disposition of the Shorthorn shows in the animal the acts of the man who owns it. We can trace their history back to a thousand years—to where they are found in Durham—we can trace the picture in the Catholic Cathedral that was afterwards placed there, and has remained there since 900 years ago—and it is a Shorthorn yet. It is no haphazard breeding, and there is no uncertainty as to what it will be if we do it properly—if we know what to do and how to do, and put that knowledge into practical use, there is no danger of losing on Shorthorns. But it has been said that there is no use to breed Shorthorns now; they are so low—not worth anything. I confess that they are low—discouragingly low in price; but there is one consolation in that connection, and that is, that it is not the first time in our history that Shorthorns were low, and that other cattle have been low, as well. Away back in 1858, if I can remember rightly, they were lower than now. They sold them then, of large size, for \$35 more frequently than for \$40. But how about the great fortunes that were made afterwards by breeding Shorthorns as they should be bred. Then the fact that Shorthorns are very low is to my mind no reason why they should not breed Shorthorns. Those who have not bred Shorthorns heretofore should commence now. You will never have another opportunity as long as you live, perhaps, to buy them as low as now, and to those who bought them when they were higher than now, I would say that unless you are going out of the business because of ill health or something of that kind, go right along breeding Shorthorns. This matter will change of itself. It will regulate itself. It is impossible to keep the price where it is now. Do you know that our tastes for beef are increasing more rapidly than our population. You know that our population has doubled itself every twenty-five years since our government was organized. It is known that the increasing

taste for beef in America is growing more rapidly than the increase of population. There is another thing in this connection, and that is this: the beef producing is leaving New York and the eastern States, they are going into gardening and other business; the cattle business is moving west. I can see that we have suffered more or less on account of range cattle, and they are being brought forward more rapidly now in proportion to their numbers than ever before, and they are trying harder now to reduce their herds than ever. There is another reason, this American appetite is demanding them. The American people are going to the South and West and settle the land as farmers, and when that is done and these vast ranges are divided among these people as farmers, we are then on an equality in the beef producing business. There are reasons why we should not quit breeding Shorthorns. The thing is not discouraging, if you will look at it properly. I know some of you have a male animal that you have paid three or four hundred, or, perhaps, a thousand dollars for, and a man would not offer you to-day more than a hundred dollars for it. You feel a little discouraged at this. You have some male calves that you think ought to bring you three or four hundred dollars, and you can't get a hundred dollars for them. But is not that true in other lines of business? Let us look forward with a fixed determination to the future of the matter and feel that the worst is over. And, another thing in this connection. The idea has been suggested to-day repeatedly that our Shorthorn breeders have been too much in the habit of putting off inferior animals on new beginners at a little better price than they can be sold for beef. That thing ought to be stopped at once; we ought not to do it. It is a thing that contributes to our injury. If we have a Shorthorn animal of that kind let us dispose of it ourselves. Breed from the best only and then you will be able, when the time comes for the best, to have it on hand, and that which you are not ashamed of. You will then be prepared to make notes and comparisons with any breeder of cattle. I take it that we will not go back; that we will not allow our energies to lag on the subject of Shorthorn breeding; that we will take hold of it to-day, especially the young men with a life of usefulness before them, that they will take hold with a determination of making a success of it. And if you will take hold of it with that object in view and that determination, I predict that you will succeed. It can not be otherwise.

I shall, perhaps, not make an address to you as president of this association. My apology is this, that I have had a farm on my hands without any assistance, except as I hired it, and I have had the care of my stock exclusively. I have about seventy-five head of Shorthorns, and this and other matters have kept me so busy that I have not had time to write an address for this association. And now, as a compensation for you for having been fooled for having elected me president, I will say that I am a thousand times obliged to you for having made me your president, and that I will not be a candidate for re-election. I say this because I do not want you to take the trouble of voting against me, and I want to suggest that we get the best man we possibly can for president.

Mr. Folsom. This is a case where a second term is in order.

Judge Buckles. I do not think a man ought to be president of this association that does not write an address every year. I thank you kindly for your attention.

Mr. Folsom. While on this point you suggested to me the idea that while it is discouraging to sell Shorthorns at present prices, and we see a great many having a disposition to go out of the business, or into some other business—and that something else is something already on top—they are seeking that which is on top, like the horse and sheep business. A few years ago you could not give sheep away. Everybody went out of the sheep business and sheep went up, and now everybody wants to go into the sheep business. It was the same way with horses. Everybody went into the horse business and horses went down, and then when they got out of the business they went up again. Now everybody goes back into the horse business again. Now, I would suggest to my Shorthorn friends that as long as Shorthorns are low take the opportunity to trim up your herds and make them better. Trim out your weeds, and if you meet with those that want to sell, buy their best. In 1847 and 1848 the best prices obtained for Shorthorn bulls and heifers were from twenty to forty dollars. That Mr. Warfield shows in his History of Shorthorn Cattle. They were bought prior to that time at a very high price; they averaged from fifteen hundred to two thousand dollars, and ten years after that they were selling at from twenty to thirty dollars, and afterwards they went up to fifteen hundred and two thousand dollars. If we are discouraged now when we can get seventy-five dollars for them, how must those people have felt who were subjected to such a decline as I have just mentioned? We should not be discouraged. This is the time to dispose of inferior stock and for replacing them with better. You are not losing much by this operation, and in a few years you will be amply repaid by the change made.

Before I sit down I want to talk about the milking qualities of the Shorthorn—whether it is real policy for us to say that the Shorthorn is to compete with the best as a milker. We ought to know whether we intend to put ourselves in this position. I think this is a good time to discuss that.

Mr. Quick. It occurs to me that this suggestion of Mr. Folsom's is in order, and that this is a very appropriate time to discuss it. I feel this way about the question that we are discussing; that if I were to attempt to tell the members who know me why I went into the Shorthorn business they would say that it was not out of choice, but because my father was in the business before me. It is the same way with the young man in politics. He gets no credit for thinking if he follows in the footsteps of his father and votes the same ticket with the old gentlemen, and he is expected to vote the ticket that his father voted before him. Now, as my father had been a breeder of Shorthorns since 1863, and the members of this association know that fact, they think that it was neither good nor bad judgment on my part that I am breeding Shorthorns also. I remember when I was a boy my father and I were talking about a certain breed that I took a fancy to. I wanted him to change, and made certain suggestions to him, and I have done so since; and his advice was that the farmer should raise an animal that will serve the most purposes for him on the farm, and that the Shorthorn was the animal. He has repeatedly said that the Shorthorn was the best known animal for the combination of breeding and milking purposes. That has been proven thoroughly and has been shown by the fairs and exhibits, and it is admitted that the Shorthorns are the best general purpose cattle known. There are none of us who are breeding

Shorthorns that would give them up. We can prove these claims. While there are those who take issue with us on these points, it has never been favorably decided. Speaking on this question of milking, the older breeders know whether the Shorthorn breed of other years were better milkers than they are to-day. Therefore, if it be so, there must have been neglect somewhere. It has been brought about probably from letting calves run continually with the cows. Some claim that this does not cause them to deteriorate in quality. It has been our experience that it does. We sell a great deal of butter and supply creameries with cream and butter, and they made as much and as good butter as any class of cattle through our part of the country. It has come to be known by those who have offered these big prizes over the country, and it has done a great deal of good. But it seems to me that all has not been accomplished that might be through the fairs and exhibits, and through the prizes offered. There is not enough competition for the amount of the prizes. It seems to me that when \$250 is offered by our State fair there ought to be 40 breeders from Indiana there, and it ought to be taken up by breeders all over the country, whether breeders of Shorthorns or other cattle. That was the intention and what was believed would be brought about by the prizes of the National Association. If I understand Mr. Folsom correctly he wants to get a way of causing these breeders to make a test, or rather a contest, of the milking qualities of the Shorthorn. We must do something, as our breed of cattle is losing ground on this question. Let us lose this point and come down to the Herefords, and we are breeders of beef cattle solely. We have milking qualities almost unexcelled even by the milking breed.

T. A. Cotton. I am here representing one of the Shorthorn breeders of the State of Indiana. I engaged in the Shorthorn enterprise in 1872, being admonished by our old pioneer just passed away, and I have never regretted yet that I engaged in the Shorthorn business; and from this fact, in the first place, that the people of Indiana has as good a right to produce a good race of cattle as the people across the Ohio River. I was there in 1878. I went to the Woodburn Farm and attended the sale of Mr. Alexander's. Mr. Reinick was to have a sale the next day, and he said: "As many of you gentlemen as wish to attend our sale, come to Mount Sterling, be our guests, and consider yourselves with us; and those of different States group yourselves together, and you will be called for and taken care of." There were several, and we grouped ourselves together, and were placed in a rockaway and went out there; and when we got there we could not see a cornfield—all blue grass. There was a nice residence and a good barn-lot, but little else. I said, after breakfast: "How do you make your living here; do you graze?" He said, "Yes, sir." I then said: "Have you anything on hand now?" He said: "Yes, sir; I have 218 head of steers on the farm;" do you wish to see them?" We told him we did. In a little bit there came a man with a Rockaway, and we were driven until we came to a nice, clean branch, with trees enough to make a good shade, and there were the cattle. They had just filled themselves and were lying down, and as he drove along there, I confess, gentlemen, it nerved me up, and I thought, "What a noble avocation this is; what a great sight compared to Shelby County, Indiana." Such a sight I was never privileged to see before. They were the same type, the same mould. I said to myself: "Why do not the people

of Shelby County raise the same kind of cattle?" We have the soil, but I concluded that we were minus the blood; and I said: "We can not have it unless somebody buys it and takes it there. I was there in company with a gentleman from Greensburg. Mr. Moorefield knew the gentleman I was with, and he said: "Gentlemen, can't you come home with me? I have room enough for you two gentlemen, and you can go with me, and we will go down to the sale at Cynthiana." We went up to the house, and he was just turning in the young stock to their mothers. I went through and looked at them, and I tell you, gentlemen, I enjoyed it. They were different kind of cattle to those I was used to. I noticed one little fellow about three months old, and took a special fancy to him. Some of my fellow-breeders knew the animal—Mr. Quick and Mr. Robbins, for instance—and afterwards I said: "Are you going to buy that calf?" and he said; "Yes, sir; if he costs me \$150." He asked what he was worth, and he said \$250. Then a gentleman about this time drove up and said he wanted to buy that calf, and the gentleman told us that "having seen you gentlemen here he went off; he didn't want to interfere." And I said, "I will buy him," and so he got on the train and come down to Cynthiana, and I asked him how much he would take for the calf, and he said: "I will agree to send him to Louisville or Cincinnati without charge," and I said, "All right, send him over." I feel just as determined to persist and go on in the Shorthorn business as I did then. I feel that it is a noble avocation. I sold fifty-two head of Shorthorns a short time ago. It does me good to-day. Only a short time ago, I received a letter from a friend thanking me that he had bought Shorthorns. But the time is coming when we, as breeders, (and I would like to have the sense of this convention upon the matter), must breed and sell only the best, and that those who buy will not say, "You robbed me; you charged me \$100 for that calf," or \$200, as the case may be. And let us use the knife on everything that will not be profitable as breeders. Let us make perfect cattle by putting away the inferior. I am a little stuck on color. I like reds, but if they are roans I can stand them. I feel to-day on the milk question like this: I have two sons, and my eldest, when he got married, went over to Kentucky and picked out a few good ones, and his wife says that they are the best milk cows she ever saw, and she knows, for she was raised to make good butter. I believe, gentlemen, that if we will treat her as a Shorthorn, that the time is not far distant when it will be acknowledged by every farmer that the Shorthorns are the best general purpose cattle in the country.

Judge Martindale. I wish to say that it has been my own observation that Shorthorn men make a mistake when they attempt to claim for the Shorthorn breeds superiority in milking. I want you to understand me that occasionally you can get a Shorthorn that is a good milker. But when you attempt to claim for the Shorthorn superiority in milking, you claim something that she doesn't possess, and you weaken the other good qualities. It applies to my herd, and to Haughey's herd, and to the best herds in America. Understand what I say; I do not say that you do not get a good milker now and then in the Shorthorn. But when you come to claim that you get as good milkers, generally, as you do in the Holstein and Jersey, you lose ground. I believe the Shorthorn is the best beef animal on earth. But when you attempt to establish a fact that does not exist,

then you weaken the cause. You take a Holstein cow. she never gets flesh on her; and you take a Jersey, she never gets flesh, but she will double on the production of milk. Why don't you get down to facts? It will pay dairymen to pay one hundred dollars for an absolute good milker, better than to pay fifty dollars for an animal that is not an absolute good milker.

Judge Buckles. Why has the Shorthorn been maintained in London as long as Jersey cattle?

Judge Martindale. Because the London people didn't know any better. They don't pretend to do it on the Isle of Jersey, or the Isle of Wight. No sir, gentlemen, when you attempt to say that you can put the Shorthorn down by the side of the Holstein, the Jersey, or the Ayrshire, the best milker in the world—the best I ever saw—when you do this you are weakening the cause of Shorthorn breeding. I have got them that give more than is necessary for the calf, and others that do not give enough to keep the calf.

Mr. Christian. You know Mr. Martindale is an amateur.

Judge Martindale. I am this kind of an amateur. I was out to see his (Mr. Christian's) stock, and he has cattle there that don't give enough milk to keep their calves.

Mr. Strange. I move that a committee of three be appointed on resolutions, including Messrs. Folsom, Gatty and Cotton. Motion carried.

The Association adjourned to meet at the Denison House parlors, at 7:30 P. M.

EVENING SESSION.

The evening session was devoted to discussion, at random, upon topics of interest and importance to the breeders.

The committee, consisting of J. J. Paul, Judge E. B. Martindale and Joshua Strange, reported, in the matter of the controversy between Mr. A. Marlott and Mr. F. S. Folsom, that they vindicated Mr. Folsom in his position, and charged Mr. Marlott with censurable negligence in selling by false pedigree. After some discussion, the report of the committee was accepted and adopted.

The same committee also reported, in the matter of the controversy between Mr. Christian and Mr. Marlott, that Mr. Christian make a rebate to Mr. Marlott of fifteen dollars. The report of the committee was concurred in.

The Chair appointed Messrs. Quick, Strange and Robbins a committee on programme.

The Chair appointed a committee, consisting of Messrs. Folsom, Strange and Quick, to induce members of the Association to furnish Shorthorn cows to compete in the class for dairy Shorthorns, at the coming State Fair.

Adjourned to 8:30 A. M.

MORNING SESSION.

The association met, pursuant to adjournment, with Judge Buckles in the chair, who said: I am requested by the Secretary of the State Board of Agriculture, to say to the members of this association, that whenever it is convenient for

them to do so, they can get a copy of the reports. Each member is entitled to one of these volumes. Perhaps I had as well speak of another matter this morning. The habit of this association has been to appoint a committee to report the names of officers, yet there have been no fixed rules, but at times the association has adopted that plan, and at other times they have been named in open meeting. Now, you can settle this matter for yourselves. You may think about it, and determine this morning how you wish to proceed in the matter. If you appoint a committee it should be done sometime soon.

Mr. Folsom. I received a letter from Mr. E. F. Owens saying that it would be impossible for him to be present. He has sent me his paper and requests me to read it.

Mr. E. F. Owens' paper, following, was read by Mr. Folsom.

"WHY WILL IT PAY TO GIVE SHORTHORNS GOOD CARE."

The reason justifying good care to Shorthorns are the same, in the main, as will apply to all other breeds of live stock, but the degree of good care should be measured in its application to each breed, according to the requirements of that breed; or, in other words, what would be considered good treatment in certain matters of management for one class of live stock, may be indifferent or even bad treatment for another. Hence we must determine in our minds just what constitutes good care, before we ask ourselves why it will pay to give it.

For example, it would be giving good care to Shorthorns to provide them with a nice clean lot, of moderate size, in winter, wherein they could be placed during the day, to seek comfort and eat fodder at will.

We might almost ignore the matter of exercise, as rest and quiet seem to suit them, and helps to accomplish the object for which they are kept, while the "aim and end" of a horse's life demands very different treatment.

The Shorthorn is wanted to put on flesh, and keep in readiness for a sale parade at any time—the horse's value depends mainly on his utility for work or pleasure—the latter should therefore have more of his life in the open air than would be necessary to keep cattle in health. He also wants abundant exercise, and such as will bring all his muscles into active play. Hence a hilly pasture furnishes a horse just what he wants in this particular, while the environments of such a life are keenly enjoyed by him. But with the Shorthorn of the highest type how different the situation in this respect.

It is an evident burden to a 1,600-pound cow in heavy condition to climb steep hills, and if subjected to such a life she plainly shows her aversion to it. She will loiter about a strawstack on level land in preference to making the necessary exertion to secure "that bite of grass" so much coveted by stock in the winter months, and which, under ordinary circumstances, would stimulate an animal to the necessary effort to obtain it. But the comfortable and easy habits inherited by the Shorthorn for generations past, cause her to dislike climbing hills, and she only submits when that is her only chance for a living.

When forced to graze such pastures she covers the ground by short, spasmodic efforts of a few steps at a time, and there "hangs on the hillside" in a constrained position till she mows all the grass within reach of her short neck. This product of old England's rich valleys is out of place on such a farm. She revels only in bottom or gently rolling pastures, where the ennui of her nature finds full repose. Here, only, can she reach that perfection in form which commands the admiration of the breeder, feeder and grazier, alike.

Let no man deceive himself by thinking he is giving his Shorthorns the best of care when he confines them to hilly pastures, no matter how good they are in the abundance of their growth. Its picturesque contour is better adapted to those cattle whose frames are light and agile, and our pride in our favorite breed is "that they are not built that way."

But why will it pay to give our Shorthorns good care in this simple matter of surroundings? Because, no matter how much other attention is bestowed upon them, they will never yield the highest results if they must climb all day in grazing, and the highest results are absolutely essential at the present day to ensure that justification in keeping Shorthorns which even the best lover of the breed desires to feel. It pays to give good care to Shorthorns because, on general principles, "anything that is worth doing at all is worth doing well," and in nothing is there more to be gained by good care than in the keeping of Shorthorns. This is true in a commercial sense and in most things mundane; the balance-sheet at the close of the year constitutes the sole test for future attention to them. In the case of the Shorthorn, however, a variety of reasons may be found. It is conceded by all that good care pays the breeder financially, but if he is worthy of his calling he finds genuine pleasure in making his animals look well. There is a constant satisfaction, as he passes about the farm and views their well-rounded forms, in the knowledge that the breed of his choice is inimitable in proportions—in short that there is no bovine form so complete in its perfection as a perfect Shorthorn. So perfect, indeed, that it is the ideal of the artist as well as of the man of affairs, and is the admiration of the well-trained eye in all.

Remuneration, in kind, is received by every good breeder for the care of his cattle when his heart fills with honest pride at the results of his skill, and makes him feel himself the peer of men in the highest calling of life. If his Shorthorns are properly bred and cared for, they are monuments of a distinction that will mark him as an intelligent, progressive man. The careful and scrupulous breeder will command the respect of his neighbors, who, when occasion offers, will heap substantial honors on his head, while he is ever in readiness for that promised reward which comes in time to him "who is dilligent and waits."

DISCUSSION.

Mr. Folsom. There is one point that I observed in the paper that I can hardly agree with. Mr. Owens states there that it is a good thing to have a lot in which cattle can run on fine days in winter. That is very good, but he states also that he thinks it is very immaterial as to exercise—as to whether they exercise or not. He believes in turning them out during the day. I think it is the proper time for the

animal at night and morning and noon. I don't think it is the best thing to turn them out and place fodder under them all day. Turn them out and let them exercise; give them opportunity to exercise. If they are turned out in a pasture or lot for the purpose, and if they haven't fodder on which to nibble all the day, they are more liable to take their exercise. If allowed to nibble at will while out for exercise the result is when they are turned into the barn for the night they haven't that keen appetite that they would otherwise have and their system is not in condition to digest the food.

The next paper on the programme, by Mr. W. C. Chapman, was then read:

"THE MOST ECONOMICAL MODE OF FEEDING CATTLE."

The most economical manner of feeding Shorthorns is a problem that I am not able to solve, and the best method can only be reached by constant and watchful experiments. There are, however, a great many things that will aid the solution of this question, some of which are, Shorthorns possessing feeding qualities, shelter, feed and water. The breeder that can combine these elements successfully will be the one to solve the problem of economical feeding.

We want Shorthorns that will respond to feed and attention; by this is meant animals of such breeding and formation that will show the flesh put on, and put it on in such shape as to command the highest price when put upon the market. This is an age of utility and the average breeder does not stop to consider, is it pretty? but, does it pay? Shelter, I consider, as coming next in order to economy, for fully one-third the feed can be saved and the same results obtained where the necessary protection is provided; by this is not meant the sunny side of a straw-stack, but warm, ventilated, well lighted and well littered barns, free from draughts of cold air and unpleasant odor.

The feeding arrangements should be so constructed that there will be no waste of feed. Mangers are preferable to racks for hay and coarse feed, and should be constructed so that there is no possible waste. Each animal should have a separate stall and be tied. By this means the weaker members of the herd are not subjected to the rulings of the stronger, but each animal gets its allowance of feed. Their rations, of course, are regulated by the location of each breeder.

Many questions arise in this connection—what grain can he use? Rough feed? Proximity to market and value of such feeds.

Recommendations of rations for farm animals have been made by both scientific and practical men, and these are good where breeders are exceptionally situated, and feeding for exceptional purposes. But what we want is to use the feed that is home-grown, and derive the greatest benefits from its consumption. Sheaf oats, corn fodder and hay should be cut fine and fed with crushed corn, corn meal, ground oats and bran in proportion to the requirements of the herd and the results to be obtained. All feed should be fed in a condensed form, and prepared for the mastication and digestion of the herd. The feeding should be done with regularity, and not more than the demands of the animal require. No feed should be left from one feeding time to another. It requires the greatest care and

precaution to feed successfully; it is an art not easily acquired, and to be successful in any degree the wants and powers of assimilation of each animal of the herd have to be studied.

Good, pure water of right temperature should always be provided, either in summer or winter. When the water is heated for winter use the cattle will drink all their systems require and not chill its effects. For the past two years we have used tank heaters with satisfactory results, and would recommend their use.

There is no feed so cheap or healthful as plenty of good, nutritious grass, and every breeder should provide himself with plenty of pasture.

Shorthorns that won't please the eye and fill the pail with the food nature has provided for them, are complete failures, and a disgrace to the noble breed of red, white and roan.

There are two seasons of the year that need special attention; and these are from dry to green feeding, and *vice versa*. At these periods Shorthorns should not be permitted to lose flesh. Timely feeding is practical economy.

In conclusion, get good individual Shorthorns, and never permit them to lose their calf fat. Provide good, warm shelter, and plenty of feed and water. Measure the feed to each animal; feed liberally, but not in excess of what they clean up nicely. Scant feeding is wastefulness; the most economical is the strongest, consistent with health.

DISCUSSION.

Mr. Strange. I would like to ask the gentleman, why he would measure the feed for each animal, and how? Upon what rules?

Mr. Clapham. It is my experience that all animals do not eat the same food alike, and they eat it in different proportions. Some animals will eat more corn than oats or bran. I would measure by the simple fact that you know what they eat. My experience is, that herders in a measure, at least, feed just as you tell them to. If you tell them to throw in a certain amount they will do it every time, whether the animal eats it or not. And it is a good plan, if a man can not attend to his own feeding, to have a specific rule.

Mr. Quick. I believe the answers of Mr. Clapham in the main coincide with my views of the matter, except as to the person feeding the same thing all the time, or just as you direct him. I would not want to have anything to do with a herdsman that would have to have directions to measure the feed every time. I would want him to have some judgment in the matter. The fact is, there are no two animals that you have to feed the same way. You have to be acquainted with the nature of every animal's disposition or appetite, rather, I would say, you have to know what that animal cleans up or what food it takes best. I have been told that some animals won't take concentrated foods at all. Their systems would stand concentrated food. Their systems don't seem to be strong enough, while others on the other hand, will eat an abundance of it. Of course the herdsmen will have to measure it. There was another point that came into my mind, when the paper was being read, and that is about the warming of apartments in the winter for animals. I have seen that it is a good idea to warm the water and so on; and we find also, that during this weather our cattle have done well, it being

a mild winter. It might be that the heating would cost more than the profit to the herd. It would be costly for us living out of the gas belt. The barns could be tight enough to regulate the temperature very well during the cold months. When it is very cold our cattle draw up and they eat less, and you notice a difference in their digestive apparatus, and a difference in their eating. This is due to these cold snaps of the weather. If we could find some plan to bridge over these times it would be a good thing.

Mr. Strange. On the warming question, I can agree with the gentleman only in part. I believe that if you weatherboard your barn good and tight, good siding, and so on, and have it so you can ventilate it well, it is sufficient warmth; but I do not consider it sufficient for the younger animal. The fact is, our animals, to do well, must have their daily exercise, and they should have it.

The Governor was escorted in by the select committee, and Judge Buckles said: Allow me to present to you, His Excellency, Governor Hovey.

THE GOVERNOR'S REMARKS.

MR. PRESIDENT AND GENTLEMEN—I wish I knew as much about this question as you do, so that I might talk to you intelligently. I must confess my ignorance about your meeting in detail. I know something of the object in general, and I know that it is in the right direction; and I know, too, that the cultivation of this class of stock will add greatly to the wealth of the State. It is so with your sheep, your swine, and your cattle. Indiana is in every regard a State where stock of this kind can be cultivated more perfectly and profitably than in any other State in the Union. Its air, its water, and the soil all favor the raising of cattle perfectly and profitably, much more, perhaps, than sheep, and if you cultivate them properly, it can not help but add materially to the wealth of the State. It is not necessary for me to say to you, gentlemen, that the scrub cow will eat as much as your good stock, and will cost you as much to keep, but the value of the two is very different. It is not necessary for me to make this point. If every hoof in this State was good stock and full-blooded, the wealth would be doubled or trebled; hence it is to the interest of every cultivator of stock to cultivate the best. My wishes are with you, gentlemen, and I hope you will succeed. [Applause.]

Mr. Phillips. I wish to ask Mr. Clapham one question; that is, in feeding, whether he wets or dampens the feed where he wants to mix bran and cut feed?

Mr. Clapham. No, sir; I do not feed chop feed like most breeders do, but I believe it would be best to dampen it.

Mr. Spahr. I beg leave to differ. I fed three steers, two years ago, until they weighed 2,400 pounds each, and I tried to feed them the way they wanted it, and I fed them through the summer, also, a while on grass. I wet the feed for them and they didn't want it, and it taught me a lesson, and I have since fed them dry. I recommended it to my neighbors; they said their cattle would not eat wet food, and they tried the dry, and they say now that they will never feed wet food again. And I know, too, that dry feed gives the cattle an appetite. Another thing. I don't house my stock as much as many do. I let them eat and turn them out around straw piles (a shed I have fixed up) and they lie around there, and I

don't think I house them two weeks during the winter. I do not think that this winter my cattle have been in ten nights, and I believe they will compare favorably, with the care they received, to any cattle in the country.

Mr. Phillips. I learned that it was the proper way to feed (to dampen it) but when I came to test the matter for myself I found it a failure. If an animal leaves a little, in the summer, it sours, and it makes him slack up, and I have adopted the rule of feeding dry feed, no matter what the feed is.

Mr. Folsom. The only point I can see in favor of wet feed is this, that the ground feed, if put on top, is better wet. For this reason you can then distribute the ground feed evenly through the cut feed, and, if the animal takes it, it is better prepared for mastication. On the other hand, if it is put into the box dry it is liable to get the top feed by itself, and if moistened enough it sticks to the ground feed and is taken together.

Mr. Christian. I am a firm advocate of chop feed for horses, but not for cattle. I tried it on my cattle. This year I chopped oats and clover hay. I chopped enough to last my cattle a week. I put a basket full in and then a measure of corn and bran, and the herdsman's order is to stir in the feed dry. I raise fruits, too. On the 1st of February I begin to grind them up and put a certain measure in my feed box, and then my herdsman drops in the roots and it is moist and it sticks. Last winter I cut my corn fodder. I never feed whole corn fodder in the barn. In cold winters I cut my corn fodder and mix it with hay. I just cut clover hay and sheaf oats this winter. I also gave my cattle a small bundle of clover hay at night, and I stopped the dampness business with cattle long ago.

Mr. Folsom. There is a point on the kind of measure of feed. I believe Mr. Clapham mentioned that. When I feed a dozen steers, I begin with about a half ration, measuring the feed exact. I would increase that ration gradually, but an exact increase. I would make the increase the same to each animal. I would so continue as long as the animal ate it clean. Then just as soon as an animal left a fraction of the ration I would stop on him. I would feed him the same ration the next time, and if he still left some, then I would draw back a little; and I would do so with each animal. If, within two or three days, he would leave some of his feed, I would step back a little. I would have exact measures. One animal may eat one-third more than another. I would, therefore, begin with a half ration and see how he cleaned his trough, and when I saw that he ate it clean, I would stop there. I would want no throwing in of anything until the feeding time. I would want the times exact. I would not want twelve to mean one, or six to mean seven. I would be accurate in everything.

Mr. Spahr. We are talking about feeding Shorthorns. I find that I don't have to feed my cows as I would feed a yearling calf that I wanted to grow. They are in fine order. I turn them out to the straw pile, and they seem to be as full as I want them. But the calves I want to grow, I feed them well. I feed according to the ability they have to put on flesh. If I fed them as well as I feed my yearlings, they would get too fat.

Mr. Folsom. I think the rule would apply to stock cattle that would apply to the other. I would feed them by measure, but would stop when I found they had

enough. I would find out what it took to feed each one, but I would measure it and be exact. We can not feed on straw alone; we must expect to feed other feed as well. I would feed at regular times. I would not feed hay in their manger even between meals. I would give them what they want to eat, and when they were done that would settle it.

Mr. Marlott. I have fed several carloads of cattle in my time, and fed them on corn principally, didn't measure the corn, but fed about what I thought they would eat clean, and fed them twice a day, and I have had them average 1,650 pounds at three years; and I had some that averaged 2,018 pounds—one weighed 2,400 pounds, and another, 2,350. But the lot averaged 2,018 pounds at about three and a half years old. Some were a little older. They went away just before Christmas, and all would have been three past except two, and they were four. My biggest growth I made on these cattle after feeding them through the winter, was on grass. After I put them out, on the 4th day of May, on grass, and then fed them on corn, they gained in June, 176 pounds on the average and some went as high as 204 pounds. Therefore, I found more profit in feeding them grass than I did in feeding them through the winter. Still they did very well through the winter. So far as feeding our calves is concerned—I have twelve young steers—I have a cutting box that cuts about an inch long. A man can cut several bushels in an hour. He can cut it nearly as fast as one man will carry it through the front door and get back. In other words, a man can cut a basket full before the other makes a delivery and gets back again. Then we shovel it into a three-peck basket, and give it to them by the basketful. We give them clover at night.

Mr. Folsom. I will admit that Mr. Spahr has the faculty of getting along pretty well with his cattle some way. I have visited his place several times and found his cattle in fine shape. I will state what I observed while there. His young stock and cows (the yearlings), those that he was feeding grain, I think I found plenty of grain in their boxes—good corn. I asked him if that was his way of feeding. I see that the results are pretty good.

Mr. Spahr. I understand you to say that I give feed at random, and you give by measure. Now, I will ask you if my stock is not as good as yours? I do aim to feed them well, and I may have fed them a little too much at times. But while he was there they may have been over-fed a little.

Mr. Paul. I notice that some of our breeders are getting this feed question down to a pretty fine point. As Mr. Folsom stated a while ago that he had a number of cattle, and was very particular about feeding, I will ask him if he is present when they are fed. There are exceptions to the rule. Some Shorthorn people measure their feed. I think this is rare, but it is a pretty fine point, and as Mr. Folsom has stated his manner of feeding I would ask if he is present at the time they are fed, or attends to the feeding himself or not. I would suppose that a man who has adopted that kind of plan would be put to pretty close watching. I have been breeding Shorthorns a number of years and I have some doubt upon the subject. In feeding for milking purposes I feed differently. I think oats is one of the best things to feed cattle for milking purposes, especially if ground, and the way I feed my stock is this, I take one measure of shelled corn and two of oats

and I have that ground, I have a cutting-box and I cut clover hay and mix in that ground feed for my milk cows. If I have calves old enough to eat I don't let them have all the milk, but just a portion. As soon as they are old enough to begin to eat feed, I give them shelled corn and a little bran, and I aim for them to clean up all the feed in the troughs. I do not think it is a good idea to have feed in the troughs all the time for young animals, but as to measuring the feed so accurately in that particular, I think it is a very fine point and can not be adopted unless one can be there individually and superintend the feeding all the time. A mild winter like this it does not require so much feed for them, and when they run on pasture it does not require so much grain. When the winter is cold it requires a little more grain to keep up the animal heat. This question of feeding Shorthorn cattle is a very important one, and it depends upon the farmer as to feed if he expects to raise all the feed. But in feeding any of the condensed foods that is different. It is quite a fine point to discuss, and I guess it is always better to feed what he produces on the farm without the condensed foods. I think oats is one of the best grains a man can feed his stock, it makes bone and muscle. It is good to feed to hogs, and I would feed it without being ground, but, as to cattle, I would feed it ground.

Mr. Folsom. I can answer the question as to whether I superintend them. No, sir; and it is for that reason that I establish the rule, and for that reason I commence low enough and find what the capacity of the animal is. If I were present I could see for myself; but not being present, I adopted this rule that it might be done as well in my absence. Last November, I think it was, I had a Shorthorn steer in the care of my herdsman fed up in the best possible manner. I told him how I wanted him fed. I gave him the measure and explained to him that I wanted so much of such a compound of oats (ground oats), corn meal and chops given him. I said "if he eats it increase it and feed him for five days at that ration, and you can tell if it will be necessary to increase it on the fifth day, and feed so many days on the increase, if there be an increase." In this way he got the steer's capacity. When he saw that the steer left anything in the box he reduced it; I had him stop right there. He might leave a little the next time, and he might then for two or three feedings consume it all. I told him that if in two or three feedings more he left anything he was feeding too much, and to stop right there and keep him there all the while. That is what he did, and I think his results were good, and I have never had an animal increase so rapidly on my place as this one did.

Mr. Christian. Mr. Paul seems to think the measurement plan too much trouble for the ordinary farmer. I do my feeding like Mr. Folsom, by proxy. He just takes his basket and gives the animal one measure or two measures, and I watch them when I go out, and I tell him whether to give more or less. After the cut feed is in the trough he takes his basket filled up with the ground corn and bran; he goes along with that and has his little measure—a gallon measure—and gives that animal so much, and when I go out once or twice a week I notice their condition, and if I see that one is taking on a little more flesh than another I note it and gauge it accordingly. If they clean it up it is all right; if they leave a little, we slack up.

Mr. Folsom. It has been suggested to me that this association before it adjourn ought to take into consideration the question of offering a special prize for fat steers to be exhibited at the State Fair. The question might be asked, How are we going to pay the prize? I would suggest that if a committee were appointed for that purpose the money could be solicited during the year from Shorthorn breeders sufficient to pay those premiums. I think there will be ways and means to pay these premiums.

Mr. Christian. I don't see what this association is for if we should solicit subscriptions. Let these men offer a premium, and assess the members, and if we find we haven't got any money in the treasury assess the members twenty-five or fifty cents, or a dollar, and then let every member who wants to compete for the prize do it. Let them offer the premium, assess the members, and raise the premium, and then let every member compete.

Mr. Strange offered the following resolution, which was adopted:

WHEREAS, The appropriation made by the State Legislature for farmers' institutes has been inadequate to meet the needs of the institute work of the State; and,

WHEREAS, The great manifestations of the good already accomplished to the improvement of the live stock industries of the State, and believing it to be a source of general good to the social, educational and financial interest of the State; therefore be it

Resolved, That the State Shorthorn Breeders' Association asks the next General Assembly to make an appropriation of \$10,000 annually.

Mr. Folsom offered the following resolution, which was lost:

Resolved, That this association offer suitable prizes for an exhibit of thoroughbred Shorthorn steers at the State Fair in 1890. Be it further

Resolved, That the chair appoint a committee of three to arrange a premium list.

Mr. Quick. The Committee on Programme offered the following report:

We, your committee appointed on programme, respectfully beg leave to offer for your consideration the following

PROGRAMME.

1. Call to Order.
2. President's Address.
3. Unfinished Business.
4. New Business.
5. "Facts Relating to the Combination of the Beef and Milking Qualities of Shorthorns," Mrs. Virginia C. Meredith, Cambridge City, Ind. Discussion led by Judge E. B. Martindale, Indianapolis.
6. "The Best Method of Rearing Heifer Calves for Breeding Purposes Exclusively," I. N. Miller, Upland, Grant County, Ind. Discussion—C. P. Miller, Greensburg, Decatur County.
7. "Is the 'Professional Show Herd' an Advantage to the Shorthorn Interests?" Capt. John Welch, Gosport, Owen County, Ind. Discussion—B. F. Legg, Tipton, Tipton County.

8. "Which is the Better to Use, an Aged or Young Bull," Dr. N. D. Gaddy, Lovette, Jennings County, Ind. Discussion—J. D. Spahr, Centerville, Wayne County, Ind.
9. "Best Rations for a Shorthorn Dairy Cow," Phil. F. Nye, Goshen, Elkhart County, Ind. Discussion—S. E. O'Neal, Dupont, Jefferson County, Ind.
10. "What are the Greatest Obstacles that Shorthorn Breeders Have to Overcome, and the Best Way of Meeting Such Obstacles?" W. F. Christian, Indianapolis. Discussion—T. A. Cotton, Manilla, Rush County.

The report of the Programme Committee was concurred in.

Mr. Bals. I move that the Secretary be instructed to call on every member for the dues of 1889 and 1890, and that every member that pays up shall be retained on the books, and that every member who fails so to do within thirty days after the notice shall be given, shall be dropped from the roll.

The motion was carried.

Mr. Folsom. Your Committee on Nomination of Officers reports as follows:

For President, Judge J. S. Buckles, Muncie, Delaware County.

For Vice-President, Thos. A. Cotton, Manilla, Rush County.

For Secretary, Thomas Christian, Indianapolis.

For Treasurer, H. C. G. Bals, Indianapolis.

The report was concurred in.

Judge Buckles. Of course it is very gratifying to me that the Association has overlooked my faults and now manifests a disposition to trust me a second term. I had no expectation of that, and did not desire it. I really think the Association ought to elect somebody else. But I will say this, that if any gentleman desires to be a candidate let him be a candidate and be elected, and there will be no complaint on my part. But if the Association desires with unanimity that I serve another term, I will do so; but I had no idea of doing so.

Mr. Folsom. As President of this committee, I will say that we have canvassed the thing very closely, and we conclude at this time, when everything is at low ebb, when this Association wants all the prestige it can get, Judge Buckles is the proper man. We don't see how we can get along without him.

The Chair. The gentlemen named in the report of the Committee on Nomination of Officers will consider themselves as elected.

Mr. Christian. Should we not take some steps to offer a premium this year? We ought to offer a good premium.

Mr. Bals. It would be ridiculous to ask the State Board to offer a special premium. They would not think of it for a minute.

Mr. Robbins. I think Mr. Bals is mistaken in that matter. I think it is the duty of our State Board to give us a chance. I think if we had a committee to properly investigate this matter and bring it before them, something might be done.

Mr. Bals. What Mr. Christian desired was, that this Association ask some assistance at the hands of the State Board. I think it is a ridiculous idea. We don't want to do anything of that kind, nor would they do it. If they wanted to

do this they would open a class for that sort; but to ask them to come in and give us a certain amount as an Association to offer, why that's the wrong idea. We want to offer that ourselves.

Mr. Quick. If I understand it, asking a thing of this kind would be like asking the Board to offer a prize for some other State Fair. They would not do that; that is the ridiculous part of it.

Judge Buckles. My idea about this matter is, that our own State Fair should award the first premium; that we should compete there first, and after that, having shown our hand, then go to Chicago. I want to know whether or not it would not be as well to appoint an executive committee of five to take this matter into consideration—leave the matter open at their discretion, and if the Secretary succeeds in collecting enough to offer a reasonable premium, then offer it; and, if that is not the case, then, in a private way, call upon the members for money. I promise now that I will pay \$5, if asked for it; and here's my friend (Sankey) who could pay \$15 or so; he's a good-natured fellow. I am not making the motion now to be acted upon by the Association, but simply making the suggestion that it would be well to appoint a committee of three or five, and let that committee have discretionary power in reference to this matter. If the money can not be gotten in the first way suggested, let it be gotten in the other. I would delight to see an exhibition of fat steers at the State Fair, and if we don't succeed the first time, let us come again; and if we succeed then, at the third time, let us go to Chicago, and not be beaten unless the Chicago gentlemen have better cattle than we have.

Mr. Folsom. If we have an Executive Committee, this matter should be in the hands of our standing Executive Committee. I wish the Secretary would read the constitution on that point.

Mr. Folsom (in the Chair). I think that covers it.

Judge Buckles. Then all we need to do is to add one or two members from Indianapolis to that committee. I move, then, that Judge Martindale and Mr. Folsom be added to the Executive Committee, to act in conjunction with the regular Executive Committee, to aid in paying a premium for an exhibition, and that they raise the money as I have previously suggested.

Concurred in.

Mr. Christian here offered the following resolution, which was adopted by the Association:

Resolved, That the Executive Committee request the Indiana State Board of Agriculture to institute a class at the State Fair for pure bred, fat steers, open to all breeds.

Mr. Folsom. I suggest that we have time for any members that did not comply with the provisions of the programme, we now pass the time in accordance with the resolutions passed on yesterday, and that we now have an opportunity to take that fifteen minutes.

Mr. Moore. I want to say, since you have called upon me to take part in this discussion of the most economical manner of breeding Shorthorns, that there is one point which I might mention in the economical method of raising Shorthorns, and that was referred to by Mr. Cotton in his reference to his visit to Kentucky. He says he saw no corn fields, wheat fields or stubbles, and I am convinced from the

little experience that I have had, that it is necessary to have an abundance of blue grass pasture. Now, this year, if our pastures had been left to grow and the other stock had been taken off of the pasture about September, and not allowed to go on until Christmas, we might have had a very good pasture the year round; they would find a ration there that would be good for them. It is an appetizer and a great thing in other ways to keep them in good condition. I find it necessary to have an abundance of blue grass pasture. Have the pasture, even if you have to sacrifice the raising of corn and other grain.

Mr. Gatty. In the blue grass region of Indiana proper, perhaps, the advice given by the gentleman is very well taken. But there are some portions of Indiana in which there is a clay soil that other grasses would do better on. Blue grass does pretty well anywhere if you give it a chance; but I am sure that the meadow fescue or English blue grass would do better here. It is about as rich a grass as ordinary blue grass. It is a very rapid grower. It is thought to be a little earlier than orchard grass. The better way is to have a mixture of these grasses, about one-half orchard grass, but I have a field of meadow fescue alone. I got my seed for \$1.40 and \$1.50. It is better to mix a number of grasses. Take orchard grass and meadow fescue, and there are a number of other grasses. Fall fescue is better than the regular meadow fescue. You will have to cut it in June, and then it will make you a good pasture, and you can save it for winter. Some recommend in addition the creeping bench, the red cloud and sheep fescue, and a number of others besides. By having this mixture it will occupy every inch of the ground. It will turn off more hay than timothy. It is better for the ground than timothy. Timothy is exhaustive to the soil. It roots near the surface of the ground, probably not going more than 6 or 8 inches deep, while these others go 12 to 18 inches deep, or perhaps deeper, and it is claimed by many to be as good a fertilizer as clover. Of course this grass can add no mineral substances or manure, but it will bring it down from the depth. But we will not live long enough to get rid of it all. Your ground will be rendered better by a mixture of grasses. Start on a small scale and you can add the tall meadow oats, the English rye grass, and the Italian grass. By keeping it right you can keep it in perpetuity. Get 5 or 10 of these deep rooting grasses. If you sow meadow fescue alone you had better use plain clover. The meadow foxtail is a deep root grass also.

Mr. Folsom. I would like to ask the Doctor if he has tried this grass by itself.

Dr. Cotton. Yes, sir; I have. It is like the orchard grass.

Mr. Folsom. I had sent to me some grass from Kentucky that measured five feet and ten inches.

Judge Buckles. You spoke of certain parts of Indiana that are not adopted to the grass.

Dr. Cotton. I mean Southern Indiana. It grows there well but not so rank as it does in other parts of Indiana. It is better than the blue grass for summer pasture. It will come earlier in the spring and do well for a while, then it dries and there is not so much good in it until September, when it starts up again. That and the rye grasses are rapid growers. In 1881 I had the orchard grass alone and had to depend upon it during that dry year. It will stay green and if you

want to save it for winter, it will not disappoint you. In a circular sent me, it referred to one man who pastured steers on that meadow fescue, and they gained four pounds a day, each one gaining one hundred and thirty pounds every thirty days. He thought the scales were surely wrong, but found they were right. It is a pretty big yarn to swallow. In our part of the State the Indiana blue grass is better than the English blue grass. Our locality is well adapted to it and it comes up wherever it has an opportunity. But a more thorough test might prove that the English blue grass would be better.

Mr. Folsom. Before we adjourn I would move a vote of thanks to the men who have spent their time to produce these able papers.

The motion was adopted unanimously.

Judge Buckles. Our meeting upon this occasion has not been as universally attended as I would like myself; not quite as universally attended as I think the Shorthorn Breeders of Indiana would justify. It is true that the members who have been here have taken an active interest in the deliberations of the meeting. Those who have talked have given us good meat, and those who have not talked have listened attentively, and perhaps have learned as much from the discussions and the readings as if they had taken an active part themselves in the discussions. Let us resolve that nothing shall be left undone that would tend to bring forward the matter that we are interested in. Let us go for the top; let us feel for the top, and we will see the change the next time we meet here. Let each man resolve that he will have a brother breeder or neighbor come with him, and we will have a larger meeting next time.

Mr. Strange. I move that a legislative committee of three be appointed to look after the legislative interests of the live stock of the State, and also after the maintaining of the Live Stock Sanitary Commission, as to the appointment of a live stock veterinary surgeon.

The motion was carried unanimously.

A delegate. I move you, Mr. President, that this Association adjourn until the next regular annual meeting.

Mr. Strange. Before we adjourn we will want to appoint this committee, will we not?

Chair. That committee will consist of Mr. Strange, Mr. Quick and Judge Martindale.

The Association adjourned *sine die*.

JERSEY BREEDERS.

The Eighth Annual Convention of the Indiana Jersey Breeders' Association convened in the Agricultural rooms, State House, January 17, 1890, at 11 o'clock A. M.

President D. H. Jenkins, in the chair. The record of the annual meeting was read and approved.

The president delivered his annual address as follows:

PRESIDENT'S ADDRESS.

Several events have transpired in the Jersey world since we last met in our annual meeting, which have tended to raise in the estimation of every Jersey breeder, the value of this breed of cows; as the boys say, "Things are coming our way." Numerous public auction sales have been held in different parts of the country, and while, as is usual in such instances, the poor ones have sold at low prices, the good ones have averaged up well.

By glancing over the list of transfers we find that about 11,000 Jerseys have changed ownership during the year, being about 1,000 more than in 1887. The last volume (XXX) of the Herd Register, issued last year, shows the total number of females registered for 1889, to be 5,999, exactly the same number as for 1888; and males, 1,999, a total of 7,998 head; a falling off of 400 in the bulls.

The great event of the year perhaps, has been the sale of the Oakland Herd, containing the famous Mary Anne of St. Lambert, and her daughter, Marianne Pogis, besides others only less famous than they are. The result was looked to as a crucial test of the real status of Jerseys before the world, and was certainly entirely satisfactory. Indeed it was a remarkable sale, all things considered the best ever made. Mr. Fuller's cattle averaged over \$600 a piece, and the highest price of the year was reached at this sale—\$2,300. The great butter cow, Mary Anne of St. Lambert, sold for \$2,100; this is in sharp contrast with a 34-pound cow of the Holstein breed that sold at public auction for \$800. After this, the largest prices were reached in the regular annual sales of Tennessee. But the feature, in this direction, of the year, has been the number of private sales made at good prices; and this brings us to the

BUTTER TESTS OF JERSEY COWS.

Eighty-three Jersey cows entered the 14-pound standard list in the past year; the highest record being 31 pounds 9 ounces, made by the cow, Mrs. Knickerbocker, owned by James Stillman, Esq. Fourteen of the eighty-three cows made 20 pounds

and over in seven days, and while no phenomenal yield of butter has been made by any one cow, breeders are better satisfied with the result; more 14-pound cows.

The reputation of the Jersey cow has been won by the tests she has made. Cows of this breed have been tested oftener than those of all other breeds put together, and the tests have been made with the utmost care, and under every practicable precaution to prevent either error or fraud in the results. So tested, the Jersey cow has proved herself incomparably superior to all others both as to quantity and quality of her butter. So identified with the test has she become that it may be spoken of as a Jersey institution, introduced and kept up by her.

While the number of tests reported does not equal last year's reports, and the largest is not so great by 2 pounds, there is one feature made prominent this year that marks an important gain for the Jerseys in the public mind; that is the bringing out in strong relief and establishing by every test, whether of science or common practice, the fact that *the Jersey cow can put a pound of butter into a smaller quantity of milk than any other cow in the world*. In other words, the most noted tests of 1889, have been directed, not to finding out how much butter, but the ratio of milk to butter. This idea has spread beyond the tests, and has formed a prominent feature in the butter conferences that have attracted so much attention, especially in New York. *It is essentially a Jersey idea.*

The weather gets very warm in the South in mid-summer, but it was exceedingly "hot" in about Columbia, Tenn., at times the past season. I refer to the test of the cow, Toltec's Fancy. That there was an attempt made to throw discredit on all the large Jersey tests, by trying to prove that the milk of no breed of cows was rich enough to produce the amount of butter claimed to have been made by the Jersey, is to my mind a certainty. The Jersey breed, through the last test of Toltec's Fancy, has proven beyond any cavil that it contains cows that give milk so rich that less than 5 pounds of it will make a pound of butter, milk which is almost pure cream.

This richness of milk or large production of butter can not be attained by every Jersey cow; neither is there any great number of Axtels or Sunols. These butter tests and richness of milk are found only in this breed of cows. It is not worth while to challenge a comparison of these records. If there have been any butter tests made of other breeds of dairy cows, I have not seen them, except a few tests made by the Holsteins.

Another step forward in this direction, are the reports of the work of whole herds for a year, or for a month. One has but to look at the records to find that very many Jersey dairymen keep actual record of the work of each cow, and of the whole herd; and in every instance the result is satisfactory. In butter tests at fairs, where no butter is made, the Jersey is usually beaten; but when butter is actually made by the churn and weighed by the scales, the only true test, as that is the way it is made and goes onto the market, "our Jersey," always comes out ahead.

Concerning high tests and high feeding, I will say that nothing has occurred to change my opinion from last year. I am still in favor of high tests (forced tests), but not to the injury of the cow or race. Seven-day tests are good guides as to what a cow will do; thirty days are better, and the yearly tests tell exactly

the capacity of any cow. Feed well, feed high, if you will, always keeping this side of the danger line. Train your cows to give all the rich milk and make all the butter they are capable of, by feeding rich food in proper proportions, which is easily determined by any practical farmer or dairyman. The Jersey cow can be pushed to her full capacity without injury, and be made to yield the maximum amount of good butter, or she can be made to plod along and barely make her expenses.

Test your cows at home; see how much butter each will make for one day, one week, one month or one year; how many pounds of milk to the pound of butter, and how much feed it takes to do it. If critics hold up their hands in "holy horror" at the result, keep on with the work just the same. The power of the Jersey cow to produce butter in large quantities economically is her salvation, and I might add the salvation of the dairy. The private tests of the Jersey cow will not down; the "hullablo" raised about the honesty of these records only serve as a stimulant. It attracted the attention of many who would not otherwise have noticed them, and the careful observer will also have noticed that some of those fellows who were loudest in denouncing Jersey butter tests are quietly falling into line.

The most important lesson of last year related to the ratio of milk to butter. It has long been known that it took less Jersey milk to make a pound of butter than of any other milk; but it was only during last year that systematic efforts were made to learn the comparative richness of milk from different herds representing different breeds. This has been a prominent point in the reports of butter conferences of New York as made by Col. Curtis. At every conference it was found that there was a wide difference between herds, as to the amount of milk to the pound of butter. In every instance in which there were Jerseys or Jersey grades in the herds, the ratio of butter in the milk was very markedly increased. This is, of course, as Jersey breeders would expect it to be. These uniform results will unquestionably prove of benefit to the breed in tending to render it more popular with dairymen. This, as operating to increase the market for Jerseys, is a matter of interest to all breeders; but my purpose at present is to point to these results as a lesson from which Jersey breeders should profit.

It is fast coming to be a rule to measure the value of milk by its solid contents, and especially by its fats. It is in this quality that Jersey milk most excels. But all Jersey milk is not equally rich; in some the butter in the milk is only as one to twenty, while in some it is as one to five. Manifestly, it is to the interest of all to increase the ratio in the entire breed; to raise the average to at least one to thirteen. This must be done by breeding and by feeding.

Wherever a cow gives milk of a ratio no higher than one to twenty, careful feeding of rich food should be tried to ascertain if her ratio can not be materially changed for the better. In a majority of cases feed will improve such cows. But all cows that will not respond to good feeding should be transferred to milk dairies or butchered. They are not butter cows, and will lower the grade of any Jersey herd. The business of the Jersey cow is to make butter, and to make it at less cost and of higher quality than any other cow. To do this she *must* give rich milk.

Now, judging from the weekly transfers, the butter tests, the sales, the work of whole herds for a year, and the tone of the letters received from breeders all over the world; the future of no breed of live stock was ever so bright.

The healthy state of the Jersey market, the good private sales and the dairy work of the Jersey cow, makes success a certainty, when properly handled. And just one word to finish:

I am opposed to setting aside the churn for chemical process, to determine the butter-making capabilities of the Jersey cow.

Opposed to the practice of fraudulently coloring the mass of butter made, to represent Jersey butter.

Opposed to the idea of a general purpose beef and butter cow.

Opposed to the manufacture of butterine in any form.

Opposed to the mode of judging dairy breeds at fairs, where the different breeds come into competition; and

Opposed to dehorning Jersey cows.

Secretary W. C. Smock then made his annual report, as follows:

SECRETARY'S REPORT.

To the members of the Indiana Jersey Breeders' Association:

As Secretary of your Association I have conducted the correspondence with the persons who to-day favor us with papers upon the important topics enumerated in the programme of this meeting. I prepared, and through the kindness of the proprietor of The Jersey Bulletin, had printed programmes of this meeting. The same was published in The Jersey Bulletin and The Indiana Farmer, and I have mailed copies to all parties interested in the breeding of Jersey cattle, whose addresses I could obtain.

I reported last year that the records of the Association had not come into my possession. I fear that they are wholly lost. So far no trace of them has been found.

For want of the roll of membership the Secretary has been greatly embarrassed. I suggest that an effort be made, perhaps by advertising in The Bulletin, to secure the names of all former members, as well as all persons who are interested in the breeding of Jersey cattle and dairying, and that a persistent effort be made to increase the membership of the Association.

At the last annual meeting it was voted that each member pay an annual due of \$1 to meet the current expenses of the Association; for want of a list of the members, I have been unable to call upon them for this due, and but three of them have paid. We ought to have from this source \$100 annually to properly carry on the work of this organization.

By, and with the concurrence of the Executive Committee, we hold to-day an exhibition of butter made from the milk of registered Jersey cows. The premiums to be awarded are, \$10 in gold, for the best exhibit of three pounds, and \$5 for the second best. It seems to me that this feature of our meeting ought to be continued upon a larger scale next year, and should become a source of growing interest at each annual meeting.

I have received from dues, \$3; membership fee, \$2; total, \$5, and have paid the same to the Treasurer of the Association. I have expended for postage, \$1.25.

I doubt not, but, that if invited so to do, the manufacturers of modern implements and appliances for the dairy, would be glad to exhibit their wares during our meeting, and this might be made a source of interest and profit to all who attend.

The Treasurer was absent on account of illness, and no report from him was made.

Adjourned.

AFTERNOON SESSION.

On motion of Dr. D. W. Voyles, membership dues of \$1 per annum were established.

The Executive Committee reported that they had invited owners of registered Jersey cows to exhibit butter at this meeting and had offered premiums as follows: \$10 in gold for the best three pounds, and \$5 in gold for the second best three pounds, and that quite a number of parties had butter on exhibition.

A committee, consisting of Dr. D. W. Voyles, Prof. H. E. Stockbridge and Mrs. Frank Worley, was appointed to award the premiums. The committee retired and afterward submitted their report, as follows:

PREMIUMS ON BUTTER.

First to Mrs. George Jackson, of Beech Grove, Ind.

Second, to Mrs. Kate M. Busick, Wabash, Ind.

A communication was received from Mr. George Jackson, as follows:

BEECH GROVE FARM, January 16, 1890.

D. H. Jenkins, Esq., President Indiana Jersey Breeders' Association:

MY DEAR SIR: Physical disability prevents my presence at the Jersey Breeders' meeting, which I very much regret, you have, however, my very best wishes for continued prosperity and success. The objects of the Association are of vast importance and value to the people of Indiana, as well as elsewhere, for upon the successful accomplishment and advancement of these objects depends the improvement and more general employment of the Jersey cow for butter-making purposes, which means the production of high-class butter in greater quantities, more economically produced, and, consequently, at lessened price to the consumer.

Go on with the good work. The Jersey cow is the keystone to high art in butter making, and her works constitute the foundation of all the benefits alluded to. Without her aid the acme of fine dairy goods can never be reached.

I would offer a suggestion for the consideration of the meeting touching the competition in Dairy Sweepstakes Class, as at present arranged by the State Board of Agriculture. Let a committee (a strong one) be appointed to urge upon the Board, or its committee on premium list revision, the importance of allowing each dairy breed in the Sweepstakes Class to enter against those of its own kind only, thus, Jerseys, Holsteins, Ayrshires, etc., instead of compelling them to compete

against each other, a single committee judging all, and requested to solve the difficult problem "Which is the best?" Separate the breeds into as many classes as there are breeds, and submit the question of superiority to experts conversant with the merits and desirability of each. The award will then mean (as designed) a substantial honor to the breeder, different to the burlesque it is now, and will encourage him to greater efforts and higher aims in his breeding methods. A proportionate lessening in the amount of prize money for each breed, if this should be deemed necessary, would be infinitely more satisfactory to breeders than the present mode of showing the cattle. All other States have abandoned the antiquated plan, and if it is right to divide the breeds into different classes, judged singly, why not in the sweepstakes?

Very sincerely yours,

GEORGE JACKSON.

Resolutions were offered by Dr. D. W. Voyles and R. S. Russell, relating to the matter suggested in Mr. Jackson's communication, which, by a resolution of the Association were referred to a committee consisting of E. J. Howland, R. S. Russell and W. C. Smock, with instructions to memorialize the State Board of Agriculture upon the subject of Sweepstakes Premiums for each and every breed of cattle.

Prof. H. E. Steckbridge, of the Experiment Station, Purdue University, read the following paper on

"THEORY AND PRACTICE IN FEEDING."

The dairy cow of to-day is an entirely artificial product, a complicated, delicately organized machine, devised for the transformation of crops, food or raw material into more valuable finished articles, dairy products.

With this machine, as with all others, the more finished or perfect the raw material supplied, the greater the economy in its use, the greater the profits resulting from its transformation.

Success in dairying, therefore, is directly proportional to the skill and intelligence applied to the utilization of the food or raw material which the cow is to transform into the finished products resulting through her life functions. These life functions are no unknown factors, but definite and well-defined conditions recognized as facts.

Let us briefly consider the known relations existing between machine or cow, raw material or food supplied her, and the finished or transformation products resulting through her activity—Animal, Food, Product:

Animals and plants are most closely related in their vital functions, a most intimate similarity existing in their relations to the food they assimilate and the products evolved therefrom. Plants are known to consist of two classes of matter, organic and inorganic, and to feed on these two distinct varieties of material, requiring both for existence. Animals likewise require both forms of material, and without a sufficient supply of each find continued existence impossible. With animals, however, a further division is recognized in food constituents; the organic

matter consisting of two varieties, nitrogenous, or flesh, and force-producing material, and non-nitrogenous, or fat, and heat-forming matter. Not only is a sufficiency of each of these varieties of material essential to the normal development of the animal organism, but substitution in the animal, as in the plant, is not possible.

Plants requiring for their development a certain proportion of potash are utterly incapable of utilizing other material should the supply of this material fail. Animals likewise are incapable of forming blood, muscle or force from material of the non-nitrogenous group designed for the production of fat or heat.

The composition of the food, *i. e.*, the presence of the required materials in sufficient supply is not alone, however, sufficient. In the plant food only in soluble form is assimilable or utilizable; so with the animal, the element of digestibility is of vital importance, and must be considered in connection with the actual composition of the food supplied. Only that portion of the food actually digestible, and thus by assimilation becoming a component part of the animal organism, is capable of being considered as actual nutriment.

By protracted investigation, the average proportion of digestible material present in every known cattle food has been determined, and this proportion of the food material is known as the digestion-coefficient of that material. The case of corn meal will serve as an illustration:

	Total Amount.	Percentage of Digestibility.	Amount Digestible.
Nitrogenous matter	9.13	81	7.40
Fat	3.85	75	2.89
Non-nitrogenous matter.	68.12	93	63.35
Fibre	1.89	62	1.17

In applying the principles of economic feeding to domestic animals, one further fact must be accepted as of vital consequence. Food of proper composition and a recognized digestibility are not sufficient data for the preparation of the most economical feeding rations.

It is a recognized fact that with plants the food supplied or the soil utilized must be varied with the character of the crop to be grown. So with the feeding of animals, it is an equally recognized and important fact that the character of the food utilized must be modified materially with the character or variety of animal feed, or, in other words, with the object for which the animal is fed; food eminently fitted for the use of the horse being utterly unsuited for the use of swine; and food sufficient for the support of one class of animal may result in starvation if fed to another. The fundamental difference in foods resulting in these widely divergent products is recognized as being simply a variation in the proportion of the different nutritive ingredients present in the food. The practical application of this fact is variation in the diet of the animal; the mixing of foods of different kinds that the proper relation between the different nutritive ingredients required for the production of maximum results.

Few, if any, food materials or crops naturally furnish to the animal the proportions of different ingredients required to make a perfect or rational feeding

ration from the results of the use of which the highest success must follow, and therefore variety of foods becomes essential, and the compounding of rational food rations the key to economical feeding.

The nutritive value of a food depends chiefly on the relation existing between the two classes of organic food constituents, nitrogenous and non-nitrogenous. In practice this fact is frequently recognized without a definite knowledge of the actual reasons for the practice. Straw, for instance, is recognized as of little flesh-forming value. The reason is found in the lack of nitrogenous material; the relation between the two being about one to thirty. Linseed meal, on the contrary, possesses a ratio between these two constituents of about one to two.

The relation between the nitrogenous and non-nitrogenous constituents is designated as the nutritive ratio of the food. Substances with a large proportion of the former as compared with the latter are said to possess a wide ratio, and in the opposite case a narrow ratio, and it is on the proper utilization or construction of this ratio that economical feeding must be based. With milch cows repeated experiment has demonstrated that the ratio existing between these two classes of materials produces most satisfactory results when most nearly approaching a proportion of 1 to 5.4.

This nutritive ratio can, however, obviously be varied at will by changing the proportions of the different foods from which the ration is compounded. It should vary, moreover, not only with each class of animals, but with the condition of the animal or the use to which it is put.

Let us consider, however, its application to feeding for dairy purposes. Practical feeding experiments frequently repeated have fully demonstrated that the quantities of each of the nutritive constituents of food produce the most satisfactory results when furnished in the following proportions, per one thousand pounds of animal live weight; total dry food twenty-four pounds: Protein, 2.5 pounds; carbohydrates, 12.5 pounds; fat, .41 pounds. Total nutritive substance, 15.40 pounds. Nutritive ratio, 1 to 5.4.

In the application of this fact is the self-evident truth that these quantities can be utilized in the same proportion for any given weight of animal to be fed. These proportions may be attained by the use of any material at hand for feeding purposes by simply varying the quantities of the different constituents composing the ration, so that the final proportion of flesh-formers and fat-formers shall approach the ratio of 1 to 5.4. The average composition of the different materials to be used forming the basis upon which the desired ration is to be compounded.

The stipulated ratio, however, of 1 to 5.4 is not necessarily to be invariably followed, but is simply the criterion by which the most economical ratio for any given condition may be measured.

The cost of this ration varies, moreover, materially with the cost or market value of the raw materials entering into its composition. The desired ratio being capable of production from either one of several different materials, the market value of which may vary greatly and must determine the actual ingredients of the rations to be used to produce the desired ratio.

Not only the cost or market value of each ingredient of the ration, but also the use to which the ration is to be put and the conditions under which it is to be

fed, must be considered in determining the ration to be used. In the production of milk or butter for a good market, an approximation of the ratio of 1 to 5.4 must be closely observed. Under the condition of feeding with a different end in view or a removal from a good cash market for his product, a wider ration will be most economical as requiring a less cash outlay for the concentrated nitrogenous food necessarily added to the coarser fodders for the production of the close ratio. For farm feeding, therefore, a ratio of 1 to 6, or even possibly wider, may be most economical as requiring a less cash outlay and producing an equal revenue in marketable products.

In determining the actual material to be utilized for the ration, which shall produce or contain the nutritive ratio decided upon, the fertilizing value of the foods to be utilized must not be lost sight of. A ration consisting of nine pounds clover hay at \$8 per ton, five pounds fodder corn at \$5, three pounds cornmeal at \$15, six pounds wheat bran at \$10 and two pounds linseed meal at \$25 would cost 12.5 cents per day for a cow of 900 pounds weight. Should, however, the ration be changed to consist of nine pounds of hay, six pounds of corn fodder, four pounds of wheat bran and two pounds of oatmeal, with three pounds of cornmeal, although the same nutritive ratio is preserved, the cost of the ration would be increased to thirteen cents per day. A very slight difference in actual cost for a total feeding period of 200 days, but the manurial value of the former ration would be \$1.25 greater for the same period.

In connection with the food fed the water supply is a question of no little importance. The question as to temperature of drinking water for cattle is one of direct practical significance, and concerning which opinions radically differ. The solution of the question has recently been put to the experimental test of actual careful trial at four different American Experiment Stations; but one of them reports in favor of warming the water, and then the maximum value per cow for the entire feeding period was placed at fifty cents. The question seems really to be one not so much of temperature of water as of animal, and that no benefits result from warming the water above the actual freezing point, below which, however, it should never be allowed to descend, provided, in any case, that the animal in question is well sheltered and fed.

The object of economical feeding being the production of the greatest value of animal products as the result of the least outlay in raw material and hay in some form, forming inevitably the basis of any economical ration, the relation between total hay product of any region and the product of any other food crop is of vital importance.

The value of milch cows is obviously proportional to the market value of the products yielded by them in the market from which they consume food and for which they supply dairy products. A careful comparison of the actual market value of milch cows in every State of the Union, with the relation existing between area of grass and area of tilled crops for the same region, forces the inevitable conclusion that the value of milch cows, and consequently of dairy products, seems to be directly proportional to the ratio existing between grass and tilled lands in the region from which the animal draws her supplies.

Let us follow this statement in its application to the four States showing the highest average value of milch cows, and in the same States compare the area of grass with the area of tilled crops :

	Average Value of Milch Cows.	Ratio between Grass and Tilled Land.
Montana	\$35 65	31.8 to 32.9
Nevada	37 21	31.5 to 33.4
Colorado	39 12	29. to 23.8
New Jersey	36 39	10.6 to 61

The same comparisons made with the four States standing lowest in average value of milch cows give results as follows:

	Average Value of Milch Cows.	Ratio between Grass and Tilled Land.
Florida	\$13 47	1 to 26.9
Mississippi	15 40	1 to 31.1
Alabama	15 14	1.3 to 32.5
North Carolina	16 20	2.5 to 26.5

The same comparisons in Indiana show an average value of milch cows of \$28.67, and a ratio between grass and tilled land of 11 to 56.4, or a ration of 1 to 5.4. The four highest States in average value of cows show a ratio averaging 1 of grass to 1.4 of tilled area, while the four lowest States in the same comparison show an average ratio of 1 to 21.2.

In the first series of States the average value of cows is \$37.09, while in the last series the value is \$15.05. These facts can hardly be coincidences or mere accidents as they apply with only here and there an exception easily explained to every State in the Union. The fact seems to be demonstrated therefore that the dependence of dairy cow value, and consequently the value of her products, possesses a definite relation to the area of grass to which she has access; that milch cow value is actually proportional to the ratio existing between area in grass and area in tilled crops. Applied to Indiana this fact is further supported by the truth that Indiana actually stands in the second series of States in the production of grass and in the third series in average value of her milch cows, facts doubly lamentable when considered in connection with the demonstratable truth that in natural resources and conditions no State is better fitted for dairy pre-eminence.

Not only, moreover, does increasing the area of grass and narrowing the ratio existing between this crop and tilled crops promise to give the solution to the problem of increasing the value of our dairy stock and products, but the same procedure would inevitably act to the benefit of our agriculture as a whole.

Experiments conducted for the last three years by the State Experiment Station give average results from the introduction of grass into a series of grain rotations as follows :

	Bushels of Wheat per Acre.
Grain crops only	10.7
Grain and grass crops.	15.5
Gain from introduction of grass	4.8

And what was true with wheat was proved equally applicable to corn and oats.

The growth of a greater proportion of grass in conjunction with our other farm crops, and the compounding of this grass with the products of our grain fields to form rational feeding rations possessing an economical nutritive ratio would inevitably result in placing Indiana where her natural resources justly entitle her to stand—in the front rank of dairy States of America.

Dr. D. W. Voyles, of Crandall, Ind., presented the following paper entitled :

"THE JERSEY COW—HER FUTURE DESTINY."

In the treatment of my subject I shall endeavor to be eminently practical, and shall not go back into the musty records of bovine literature to discover the age nor origin of the Jersey breed of cattle. Others have gleaned from this field all the information that seems necessary, and the public is pretty well versed in its nature and extent. It is the whitherto, more than the where-from of the Jersey, that I am most interested in. And as in all other departments of human knowledge, we can best judge of the future by the past; and individually, I can best judge of the past by what I have personally known in reference to the actual merits of the Jersey, and as one of the pioneer Indiana breeders in calling the attention of others to these merits.

Sixteen years ago I purchased, and introduced into Southern Indiana, as the beginning of my present herd, the first registered Jersey cow—a small sized, two-year-old heifer, with first calf—I paid \$300 for cow and calf, and it was the first business transaction of my life that caused my personal friends and acquaintances to call in question my sanity. I was subjected to all manner of puns and jibes. Among the many things said of her was, that she was only intended for a man "who was too poor to own a cow and too proud to milk a goat." She was very small, and I directed the lady in charge of the dairy arrangement of my farm, to keep her milk separate and churn it. The lady aforesaid owned a very superior butter cow of our native scrub stock, and observed that "that goat would never give enough milk to make a churning, unless mixed with her cow's milk." I insisted on a separate test, however small the quantity. After a week's absence I inquired the result. Her answer was: "Oh! my cow is no account; that thing makes more butter than my old cow."

That has been the result of every comparative test ever since, where the Jersey has had a fair show and an unprejudiced tester.

But marvelous as was the proportion of butter to the quantity of milk at that time, few Jersey fanciers were sanguine enough of the future of their little pet, to dream of her some day supplanting almost every known breed as a *practical* dairy cow. Then she was regarded as a luxury; "the rich man's cow," "the ornamental lawn cow;" the smaller, more lithe and deer-like in her make up, the greater was her selling value.

Only sixteen years, and now Jersey blood prevails in my section so generally that every one who has it not, is necessarily a bogus butter vender, since they all claim to have only Jersey butter.

Why this claim by those who still persist that "common stock" is as good as Jerseys? It is, when they study the markets they find assertion will not answer,

that butter must conform to the requirements of cultivated taste ; and here again, assertion is aided by art. The true, genuine, golden-colored, waxen, nutty-flavored butter of the Jersey, has a rival in cheap markets, from the colored product of that "good as any cow," the scrub.

Such device will not deceive any one who has eaten the genuine article. Color in butter, as in almost everything else, is of the lowest order of tests, and as a counterfeit, is most easily detected.

No more can the pale, lardy, unflavored butter of the scrub, or of the Holstein cow, be made in perfect imitation of standard Jersey butter, by artificial coloring, than can the cheek, withered by age, be painted in perfect imitation of the blush of health, as seen in childhood's happy hour.

The Jersey cow has fixed the standard of first-class butter in this country so high, that none but Jerseys can fill it; hence, to-day, instead of the ornamental plaything of twenty years ago, the Jersey cow has become an animal of great utility, and is in demand at present prices, based upon intrinsic value, among all first-class practical farmers, seeking to make first-class marketable butter.

To meet this demand, she is now being bred to a different physical standard. Her size is being considerably increased; the heavy, strong-boned Jersey, that a few years ago was of little value, compared with her more delicate and symmetrical sister, has now the preference because of her greater constitutional powers to withstand the practical test of every day dairy life.

The price at which she now sells has brought her within the range of practical farmers, who are sufficiently enterprising to attempt keeping up with the increased demand for first-class dairy products at remunerative prices.

It is no difficult task to convince an intelligent, practical farmer that, as a business transaction, it pays better to purchase a cow at seventy-five dollars to one hundred dollars, from which there is an annual profit of a thirty-dollar calf, and sixty dollars worth of butter and milk, than to pay thirty-five dollars for one producing a five-dollar calf, and twenty dollars worth of butter and milk, the cost of feed and care being about the same.

But I hear some one say: "Oh, she is no account for beef." While we do not recommend her for beef, it is because she is too valuable for such use, and too small to be valuable for that purpose when compared with breeds specially bred for beef. But inasmuch as we have the general purpose man, like the poor, always with us, allow me to say that from ten years occasional use of Jersey beef in my own family, I am fully convinced that for sweetness and delicacy of flavor, the Jersey beef is as superior to other breeds as is her butter superior to their butter.

To the natural enemies of the Jersey cow—those who are either too poor or too penurious to buy one—has been added some of the scientific gentlemen of bovine pretensions—who gravely inform us that she has a very well marked hereditary tendency to pulmo-tuberculosis, and is peculiarly liable to pluro-pneumonia, and that the *butter fat* found in her milk, upon chemical analysis, does not justify the claim to the large butter yields as numerous reported.

As to the first charge, I can say without the least fear of successful contradiction, that the experience of the American breeders exceeding the hundreds in number, and embracing within their lists many of the best business men of the

country, and not a few of them of equal scientific attainments, with any of the so-called veterinary surgeons and professors of chemistry, give the lie to all such pretended scientific revelations.

Upon the contrary, the best informed physicians dealing with human life, recommend the milk of the Jersey cow, as especially adapted to the treatment of all low forms of disease, where it's of vital importance to administer the most perfect form of food in the easiest possible assimilating condition. In regard to the chemical analysis of milk as a test for percentage of butter, it can be at best only approximately correct. It is claimed that chemistry, like figures, can't lie. In the main, that is true; but in many cases, both are imperfect witnesses, telling not the whole truth, but only a part of it.

Chemists can unquestionably calculate and demonstrate the actual amount of amount of pure butter fat in a given quantity of milk. But the butter of commerce is not pure butter fat, nor is the percentage of butter fat in first-class commercial butter, uniform in its presence; neither in the same grade of butter, made by the same party, nor from the same cow at different times and seasons. Butter is a compound, and consists ordinarily of about

Stearine (solid fat)	60
Oleine and butyric (liquid fat)	30
Buttermilk (caseine and whey)	10
<hr/>	
Total	100

The percentage of caseine and whey vary much in commercial butter, from the difference in the care and pains in the making, by which they can be excluded without injury to the texture of the butter from overworking.

The relative proportion of stearine, or margarine, as most frequently termed, and the liquid fats, or butter oils, oleine and butyric, also vary at different seasons of the year, in different cows and in different breeds of cattle. The liquid fats are present in greatest quantity during the summer months, and give to butter at that season, its superior flavor and color. These liquid fats are also found in greatest quantity in the larger fat corpuscles of the milk, and make the difference in the character of butter made from cream that first rises, and the second skimming; also the difference in the butter of different breeds of cows whose milk varies in the size of their fat corpuscles—as the Jersey and the Holstein.

Stearine is a solid fat, and exists in many other forms of animal and vegetable life. It is pale and insipid. Butter owes its flavor to the liquid fats, oleine and butyric, which are peculiar to butter.

The Jersey cow having the largest sized fat corpuscles, yielding the greatest per cent. of butter oil proper, makes the highest flavored and colored butter of any breed.

Butter is not only a compound of different fats or oils, mixed with an indefinite quantity of caseine, whey, etc., but the butter fats are also compounds, and while the chemist may destroy these compounds, and separate the actual fats, he can not take a given quantity of such fat, and compound the same butter that the

milk from which his fat was taken would make in the churn, for the reason above given—the want of a standard formula for butter, and the variable proportions of these fats, at different times, and under the different conditions named.

For these reasons he can not say from the quantity of butter fat found by analysis in a given amount of milk of any given cow, taken at one time, that such cow will make just so much butter—all that he can truthfully say, is that so much of her milk, taken at such time, contained so much actual butter fat; that much, and only that can he say.

As well may a chemist, having extracted the infinitesimally small amount of essential oil in the rose, declare that the rich fragrance of that flower, during its blooming is a myth, because in his opinion, the amount of essential oil, the basis of the perfume, is too small to sustain the outlay, as by the presence of a given amount of actual butter fat, found in his crucible attempt to calculate the quantity of commercial butter the cow would make that gave milk. The Jersey, therefore, stands vindicated by both reason and practical experience, as the pre-eminent butter cow of the world.

As such, let us keep her in her purity and breed unwaveringly to the standard of the greatest amount of butter to the least amount of food.

This is the standard of business success, and when it is almost universally known, as we now know, that as such cow the Jersey is without a rival, the demand now so largely on the increase, will far exceed the supply. The sixteen years I have been breeding and handling the Jersey as a practical dairy cow, has only increased my estimation and admiration of her.

Mrs. Kate M. Busick, of Wabash, Ind., presented a paper on the

"SILO AND SILAGE."

The nineteenth century may be truly called the era of experiments. The great, general divisions of time, with reference to the geological development of this old earth we call *ours*, are denominated periods, when we speak of the development of human thought and human action we distinguish them as eras or ages. Thus we have in history the Christian Era, the Golden Era, the Dark Ages, the Age of Iron, Age of Invention, etc., each marked by some revolution in ideas, either forward or backward, progressive or retrogressive—as there is no such thing as standing still in nature—even death itself is motion in a new change of form. Thus *action*, ACTION, ACTION, is the immutable law of creation, and so each period or era being marked by some line of action peculiar to itself, we incline to the opinion that the nineteenth century may be justly termed the era of experiment, and that it will rank all previous ages in this particular characteristic. A witty old philosopher once divided mankind into two great classes, designating them as the "*wise*" and the "*otherwise*," a nicer distinction than appears at the first glance. From earliest annals of thought, wise and foolish have been set in juxtaposition, to delineate the course pursued by the successful and the unsuccessful, or as we in common parlance state it, lucky and unlucky, fortunate and unfortunate. The *wise* are continually racking their brain in the effort to find a *better way*—a way to improve upon the existing order of things, and to give a homely, practical

definition, might not inappropriately be styled the "incubators" of ideas. While the "otherwise" constitute the great bulk of mankind, who, seizing upon the developed and promulgated thoughts and theories of the wise, proceed to formulate and put them into execution, success or failure resulting in varying degrees, according as intelligence or ignorance of the party attempting the experiment preponderates. Alas! too often, be it said, *failure*, stamped in broad characters, across *finis*, proclaims to the world, *not* that the underlying principles were *wrong*, but that the party attempting its solution and application, failed for want of knowing how, in other words attempted to solve the mathematical problem of "squaring the circle" by applying with physical force and a "maul" the effort, to effect a natural impossibility, by trying to fit a square plug in a round hole—a feat never yet accomplished in the exact science. As there is no sex in genius, so there is neither male nor female in failure or success. True, Solomon the wisest of men, in ancient times, clothes wisdom in female form, and figuratively gives to all her attributes the same sexual distinction, yet it by no means follows that his congeners have been equally gallant and complimentary, although the presiding genius of American greatness is by common consent enshrined in the form of a woman, the "Goddess of Liberty," and even in the mythical lore of the "long ago" wisdom in the form of Minerva, sprang full panoplied from the brain of Jove. True, science (likewise a *she*), has for ages trodden the thorny wastes of persecution and human prejudice, with bare and bleeding feet; has submitted to have her name cast out as evil by the superstition of the unlettered, whose reason, warped by bigotry, and held in thralldom by the fetters of ignorance, saw naught of good in the growth and expansion of the human intellect. But so surely as effect follows cause, or sunshine evokes shadows, so surely did blind questioning bring forth answering echoes to the problems evolved by human ingenuity and skill, arising out of human needs, and the first great problem that confront humanity or even before it is fairly launched on the trouble sea of existence, is: "Not where shall I dwell? or with what shall I be clothed?" but *how*, or upon *what* shall I subsist; "How shall I be fed?" and he or she who makes *two* blades of grass to grow where but *one* grew before, is truly a benefactor of the race. Then is wisdom indeed justified of her children, when she makes the waste and solitary places glad, with verdure crowned, and the desert to "bud and blossom as the rose."

The myriad mouths of the animal creation must first of all be filled. Then the subject of habitation receiving the secondary consideration, precedes the momentous question "wherewithal shall we be clothed?" Since self-preservation asserts its supremacy as the first law of nature, and with multitudes it is *the only law* ever recognized or obeyed, it follows that the means necessary to that end always demand and receive first and paramount attention. So long as the primitive races of mankind, dwelling in tents, caves or huts, clad in the furry trophies of the chase, if clad at all, subsisted mainly upon the animals slain with bow and spear, no thought was taken for the morrow, no provision made for the exigencies of the future—to-morrow cared for itself. They gorged to repletion when the hunt was successful, or bore the pangs of hunger and starvation in stolid silence, when their efforts resulted in failure, until the quickening desire for something higher and better began to stir in their breasts, and the more thoughtful and provident essayed

to lay by in store for possibly future necessities. The wise provision for a "rainy day" did not originate with "Poor Richard," of Ben Franklin parentage, neither did the idea of a silo have its birth amid the intellectual throes of the nineteenth century, but was first called into being in the rainless region of the Nile, and born beneath the shadows of the Pyramids. In treating of silos and ensilage, two questions confront us at the threshold of our subject. First, what is a silo, and secondly, for what is a silo used? A silo is properly designated as a receptacle for the storing of green, succulent grasses, grains or plants, and is used for the preservation of such foods in as nearly a green and growing state as possible, for the subsistence of herbivorous domestic animals, during the winter months of the year. This is the modern idea of a silo. The word *silo* is of Greek origin, and the earliest mention of it is by Pliny, when speaking of the method of preserving grain, practiced by the inhabitants of Cappadocia, Thracia, Spain, and Central portions of Africa. These "silos" were of the most primitive construction, simply deep furrows dug in the ground, the bottom and sides lined with straw, filled to the surface with grain, then covered with straw, and an embankment of earth heaped upon that sufficient to exclude all the air. That the ancient Egyptians were familiar with the preserving of cereals by the total exclusion of air and light is evidenced by the rude sculptures and hieroglyphics found in the tombs of the Pharaohs. According to Wilkinson, their granaries were literally *stone silos*, built of masonry, much after the manner of the present day, with vaulted roofs, impervious to light and air, filled through an opening at or near the top, then hermetically closed, and the grain, when wanted, taken from an opening or door at the base of the silo. In the light of modern science and expedients, we can now see how the crafty and provident "Joseph" engineered the first great "corner" in corn and wheat. He "hedged" against the seven-year's famine, and gave to the indolent subjects of Pharaoh that huge object lesson which they doubtless never forgot, of "banking" upon the scarcity superinduced by the necessities of the shiftless.

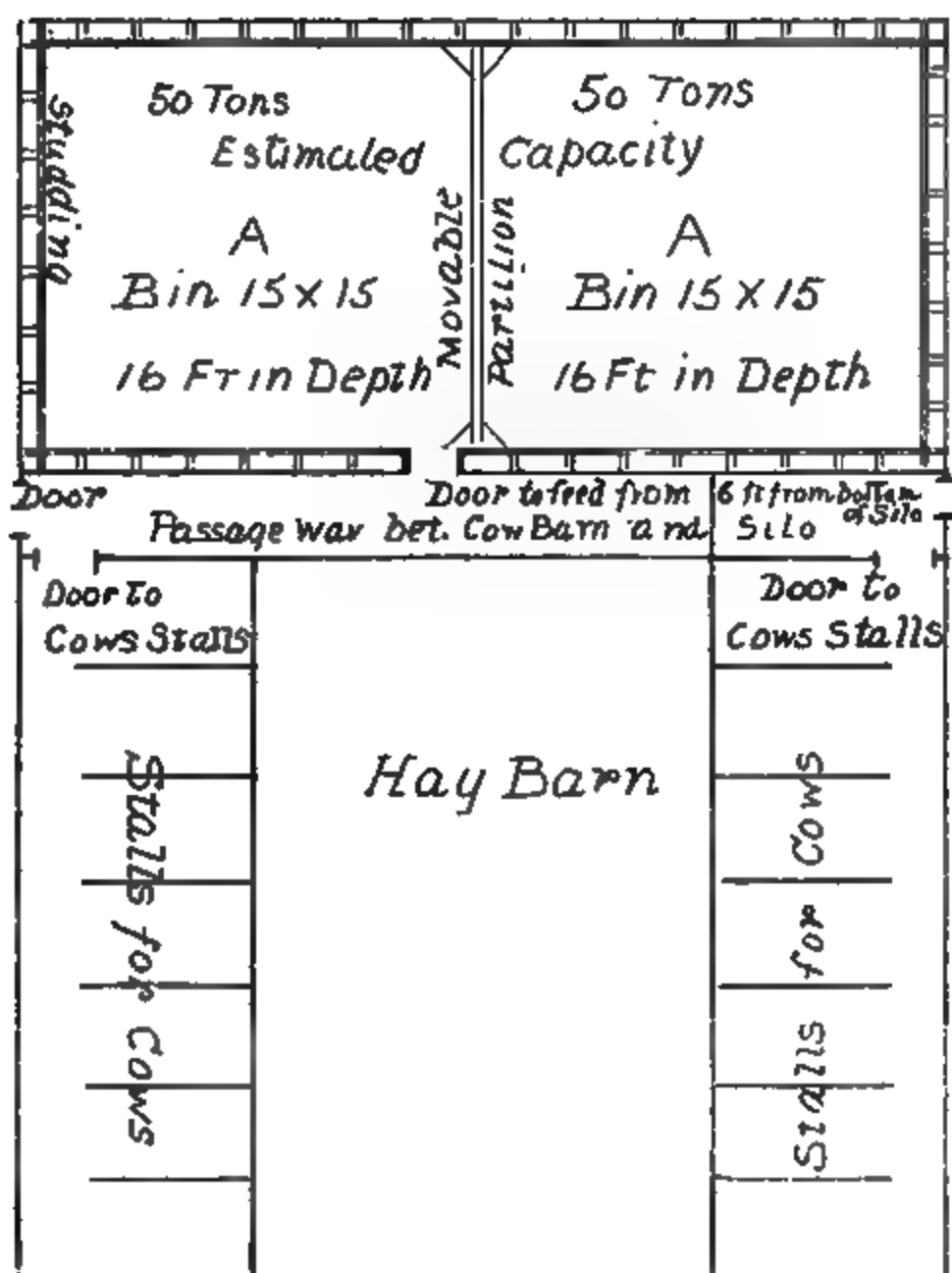
These immense stone receptacles were vastly different from the rude trenches mentioned by Pliny, yet grain in the ear placed in even these, in the dry soil peculiar to that land and climate, is known to have been preserved 50 and even 100 years, a thing only possible in a rainless region or a climate as free from the precipitation of moisture as Northern Africa. While the Moors are credited with first bringing the idea into Spain, it is highly probable that they only revived the practice, originally introduced by the early Romans, now long fallen into disuse (innocuous desuetude). From Spain the idea made its way into France. For ages no historic mention is made of this mode of caring for and housing of surplus grain products, and but for a limited practice in obscure agricultural districts it might almost be classed with the "lost arts." Accordingly we find the first modern mention of it in 1820 and 1821, when Mons. Doyère, owner of the estate of Palerne in the Puy de Dôme, stored the contents of his harvests in silos built for the purpose, and kept them (the crops) until at the end of seven years, when prices having doubled he opened them and found their contents, although a little mouldy on top, yet the main portion was practically uninjured, and so well

was he convinced of the feasibility and success of his plan that he contemplated the building of others on a much larger scale, when his sudden death put an end to his projected plans and the experiment was discontinued.

Upon the publication of a treatise on this subject by the French Count de Lasteyrie, in 1819, Mons. Ternaux, of St. Owen, made a trial of the system, but the committee appointed by the Royal Agricultural Society of France in 1826 reported so adversely upon the subject that for a time all further experiments in this direction were abandoned. Thus French science, so called, theoretically demonstrated (?) the ensiling of crops a failure, and practically set its seal of condemnation on the same, because the infiltration of water through the porous soil in the neighborhood of the river Seine, where the silos were placed, penetrating the walls, rendered the grain damp and caused it to mould and rot. They, however, had the grace to admit, that in a dry climate, such as characterized Egypt and Southern Spain, this state of things would not probably occur. This much we do know, that at the time of the discovery of America by Columbus the aborigines practiced the method of successfully storing Indian corn in pits, and this indicates a much wider geographical range of the system than the narrow view of the French *savants* would admit. Even now recent explorations among the Cliff dwellings of the far Southwest have brought to light the corn pits or "silos" of this ancient extinct people of the Western world. But it is with reference to the preserving of green fodder for the use of domestic cattle that we have principally to do, and so we note what Prof. Symonds, of the University of Cambridge, says in his "Observation," published in 1786, on the use made of leaves for the subsistence of cattle in Italy during the winter season. We give in substance as follows their method of preserving: At the end of September or beginning of October, when the heats are most piercing, the leaves are carefully gathered and thinly spread upon broad pavements, when, after laying three or four hours to become thoroughly wilted and hot, they are pressed as compactly as possible in wooden casks and closely covered with sand to effectually exclude the air. In other portions of Italy the peasants bury the leaves in pits, cover them with dry straw, on which a heavy layer of sand or clay is placed, the object being to render these pits as nearly airtight as possible.

Many, many years ago, ensilage in the form of and known as "*sour or brown hay*" was fed to stock in Germany and Hungary, but no authentic record has been found of its origin, or the conditions that led to its formation. At the present time the following is the mode of securing the green fodder crop in Germany: A pit is dug in the earth from ten to twelve feet square and as many deep, lined with timber and puddled below and at the sides with clay. Into this, just as it is cut, is put the crop of green grass, clover, vetches, etc.—vetches being a species of pea or bean much used for fodder in continental Europe, and supplying to a large extent their forage for cattle, for which we appropriate Indian corn. After four or five hundred pounds are cut into the pit salt at the rate of one pound to each one hundred weight is sprinkled on the mass, and if the weather, and consequently the crop, be very dry, water in the proportion of three quarts to the ton, in which the salt has been dissolved, is likewise sprinkled over. In eastern Prussia the water is only omitted when a heavy dew or shower of rain has fallen just previous

to cutting. It is then spread evenly over the bottom, and well trodden down by five or six men, and tightly rammed down at the sides and corners by wooden "rammers." This is repeated until the pit is filled, when a closely fitting cover of wood or boards is placed upon the mass, and heavily weighted with earth or stones. After the heating or fermentation period has passed the cover is removed, and a fresh lot of grass filled in at intervals as noted, until the pit will hold no more, when the lid is permanently replaced, and the contents left undisturbed until time for opening it for winter use. Six weeks is the time usually allowed for the ripening of the silage before opening the pit, and this constitutes what is known as "sour silage," having a sharp acid taste, albeit greedily eaten by the cattle. As it is not the purpose of this article, nor indeed within its scope, to give an exhaustive review of the chemical changes undergone in the silo, or even a short analysis of the main and valuable constituents of the foods thus preserved, the writer will omit theories and experiments of chemists and experts, and confine herself to the description of the construction of her silo (see descriptive cut on page 459), the filling of the same and the feeding out of its contents up to the present time, prefacing this description with the single remark that she doesn't think she "knows it all," but that she has much yet to learn, both as to economy in building, as well as minimizing costs in filling. The silo at "Beech Hurst" was the third constructed in Wabash County, is built entirely of wood, and the dimensions are as follows: Length, thirty feet; width, fifteen feet, by sixteen feet in height; divided into two bins by a movable partition of planks in the center; estimated capacity, one hundred tons. A foundation of masonry thirty inches below the surface and eighteen inches above was first laid, and upon this the sills, formed of timbers firmly spiked together, is placed. The framework of studding two by ten inches, and sixteen feet in height, set sixteen inches apart, is secured to these sills in the most substantial manner possible; and to still further increase the solidity, prevent spreading and exclude the air, the spaces between the studding are filled with concrete to a height of ten inches. The clay dug from the trenches in which the masonry was laid was thrown into the silo to form the bottom, was slightly graded to form a concave surface, and thoroughly tramped, forming a floor almost as impervious to moisture as concrete. The stone wall is cemented on the inside from this clay bottom up to the height of the concrete filling between the studding, making a complete air-tight join between the wooden walls and the stone foundation. The outside of the silo is covered with "drop siding" put on horizontally, fitting as neatly and perfectly as the joins in cabinet work. (Here let me digress to say that my builder was a first-class house carpenter, and I paid prices accordingly, and I am prepared now to "give a pointer" in that respect on the score of economy to any inquirer on the subject of silo building.) The inner walls are constructed first of a layer of pine plank, the edges dressed smoothly so as to fit closely. Whenever a knot hole or crevice occurred in them it was filled with cement. Over this siding heavy tarred paper was placed, the edges overlapping. Then with a second siding of pine boards, closely and neatly matched and dressed, laid upon the tar paper, the walls were complete. It was covered with a shed roof of some patented material known as "asbestos roofing," and the "pitch" of the roof was three feet in fifteen. After roofing, a square hole was cut in the roof midway on the lowest



side to introduce the "carrin" in filling, and as the cutting progressed the movable partition of planks was adjusted in position, and when filling was completed the opening was closed by a trap door. On the side next the barn a perpendicular opening two feet wide extends from the top of silage to a distance of six feet from the bottom. This is also closed with movable plank as filling progresses. The whole inside of the structure except the roof was finally treated to a heavy coat of coal tar and resin, applied boiling hot, and this, at the expiration of a week or ten days, was as hard, smooth and impervious to water as a coat of mineral paint.

On the 17th of September we began cutting our corn into the silo. The corn was well eared, carrying about sixty bushels to the acre, quite well glazed; a sharp frost, the week previous, had shriveled the leaves somewhat. The knives of the power cutter, a "Smalley No. 14," were set to one-quarter inch cut; it was operated with a traction engine, and the filling was done in the two pits on alternate days. The cut fodder was delivered from the "Carrier" as nearly as possible in the center of each pit, and two men kept continually leveling it off and tramping the sides and corners. Our County Fair intervening, a break in operations occurred, owing to a lack of hands, and work was suspended for six days. When cutting was resumed again, the surface to the depth of three inches was found to be spoiled, and was removed and thrown away. The weather at this time was sultry and showery. The balance of the cutting and filling was done in three and one-half days. Thirty-six hours afterward a layer of cut straw, eighteen inches in thickness, was spread over the top, well trodden down at the sides and corners, and a few plank and rough boards placed on top, the openings all closed, and the mass left undisturbed until the 14th of November, when we began to feed for the winter season. Was the venture a success? *Emphatically* yes! from every standpoint. No one can tell with what anxiety, mixed with dread, I awaited the opening of *that silo*. It was an experiment, undertaken in the face of long continued opposition from my better half, who had no faith in "silage," and had it proven a failure, would have involved heavy loss. Can you wonder that I spent many sleepless nights cogitating, wondering "whatever I should do," should the undertaking justify the grave apprehensions felt, and prove a flat failure. To my unbounded delight, and the entire satisfaction of my husband, the feed came out equaling my most sanguine hopes. The first mess was licked up clean by every animal, while the tears stood in their eyes, when, like "Oliver Twist," they humbly asked in their mute way for "more." We have now been feeding for over two months, to horses, mules, hogs and cattle, and with the happiest results; never an ounce of it is wasted by the stock, but is eaten with as much relish and avidity now as the first day the pit was opened. As I have had occasion to say before, everything on the place eats it but the hired girl, and I caught her nibbling at a piece of the ear corn the other day.

Am I satisfied with the results? Yes, more than satisfied, by just so much as the reality exceeded my expectations, and to my mind, the silo has gone very far towards solving the problem of economic farming and feeding of stock in Indiana. Brought face to face with the stubborn facts of over-production, and consequently low prices, it is my mind *one of, if not the most, important factors in*

solving the question, how can farming be made to pay on the high priced lands of Indiana? While demand must and always will regulate supply, cheap production will regulate the size of the profits.

The following paper, prepared by George Jackson, of Beech Grove, Indiana, in his absence, was read by the Secretary:

"IMPROVEMENTS IN BUTTER-MAKING."

For all the requirements of this paper a retrospect embracing a period within the recollection of the oldest of us, will be quite sufficient to demonstrate the wide strides of improvement that have been made in the manner of producing and in manipulating butter.

Our mothers and grandmothers, who were butter-makers thirty or forty years ago, and possibly for that time butter-makers of high degree, had no conception of the advancement and progress then in store looking toward perfection in the art upon which they so much prided themselves, for they, as a class, were firm adherents to convictions, and were very slow to adopt new methods or allow innovations upon old-time customs that had been learned from their mothers. The thermometer in the dairy-room was unknown, and if any attention at all was given to temperature, it was adjusted and regulated by the accidental condition of the hand—since irreverently but forcibly termed the "rule of thumb," an expression that is familiar to every worker in the modern dairy (the rule itself, fortunately for the good of the cause generally, is obsolete). If the cream, at churning time, was too cold, hot water was added, and if the hand was cold, and the cream was adjudged too warm, it was tempered by pouring in hot water until the right point was reached, then the churning began. Results, both as to the time required to produce the butter and the quality of the article itself, were always uncertain and very often unsatisfactory. At one time the butter would "come" in a few minutes, while at another, hours, and often a whole day would be required, and occasionally—in the experience of every butter-maker of the by-gone time—the butter refused to come at all, and what had once been cream in the churn was transformed into a frothy mass, occupying double the original bulk, but containing none of the characteristics or essential qualities of good butter; thus it was rendered a total loss, and all the hard and long-continued labor at the crank went for naught.

To those of us who were boys reared upon the dairy farm, where the cream was churned once or twice a week into butter, the recollection of this "crank" service is very vivid and real, and most of us can recall the feelings of relief produced by the adoption of the thermometer as an indispensable implement in the dairy business. Its introduction banished all guess work and reduced to certainties the proper temperature, not only for churning the cream, but in which the milk and cream should be kept from the beginning until ready for the churn. Nobody aiming at success, or with any pretensions whatever to skill in dairy matters, would, in these later days, undertake the management of the dairy-room or the making of butter without the aid of the thermometer.

Improvements have been steady and constant in the method of keeping the milk, the cream and the management of the butter. The old plan of shallow setting, in pans and crocks, has, in a great measure, been superseded by the adoption of the modern creamer, saving untold labor to the already over-worked wife and daughters of the butter dairyman of former times, for it was generally their share of the burden to do the washing and scouring of the "milk things," and when the cows were all fresh it required the entire cellar floor or the utmost capacity of the spring house to accommodate the pans holding the milk. These of course were changed and scalded, burnished and aired every day. Now the creamer does away with all this; the pans and crocks are relegated to the lumber room or are used for other purposes. The milk is poured, warm from the cow, into tall cans surrounded by cold water, each can holding four to five gallons of milk, and by a proper observance and regulation of temperature, in a few hours the cream is all at the top, and the milk may be drawn from beneath it and fed sweet to the calves or pigs. A still shorter cut, and one growing into popular favor, is found in the separator, which whirls the cream out of the milk, in a few minutes after it comes from the cow, in a manner wonderful to behold. The separator has risen in favor very steadily, and is now generally introduced in the districts devoted largely to butter making, and, as these machines become simplified and cheapened, they will doubtless take a prominent place in the private dairies of the land, and supplant all other known methods for handling the milk preparatory to churning out the butter.

But hold! Let us move slowly in prognostication and prediction. It is a very easy task to enumerate the changes that have been wrought, the improvements and advantages brought into use for handling the product of the dairy of the past; anybody can do that; but who can foretell the possibilities or the extent to which the inventive genius of man may be employed in the interests of the dairyman of the future? A little while ago the announcement was made that across the seas—in Sweden—had been perfected a machine called the "butter extractor," designed to accomplish at one operation, and in a moment, the end that previously required hours and days; and to entirely remove all the labor and care of the milk, the separation of the cream, its after-ripening, and of the churning itself. The "butter extractor," as its name implies, is an implement designed to obtain precisely the same results for which the churn has been employed for centuries, and if the sanguine expectations of the gentlemen interested in the introduction of this machine are realized, the churn will have to go, and, like the milk crocks and the primitive ways of handling milk, cream and butter, will become a thing of the past. Scientific and practical dairy experts have tested thoroughly the merits of the extractor, and they declare that it will revolutionize the art of butter-making, and will prove indispensable to the dairy business—saving the labor and dangers incidental to cream ripening—and that it removes the butter-fat from the milk as completely as the cream is removed by either the separator or by the natural process that has been employed for so many generations.

Pending the successful and general introduction of the extractor, however, the average dairyman and the creamery must depend upon other sources for the production of the best butter in the surest and most uniform manner. Here again are

aids at hand through which best results may uniformly and confidently be expected. By the application of a mechanical apparatus the cream is ripened and kept at the precise point required in the finest butter with as much system and regularity and thoroughness as a batch of bread is leavened by introducing into it the required amount of yeast at a given time, and the principle involved in the two processes is not altogether dissimilar. Fine butter with good keeping qualities is the natural result obtained from cream properly ripened and otherwise mechanically handled, and to get these qualities uniformly and without fail has ever been a perplexing problem with the butter-maker; variation of temperature, electric storms and other climatic changes very often defeat the very best laid plans, and the greatest exercise of care in the dairy-room and even depending upon the taste or smell or a general condition of the cream are at best poor guides for the butter-maker in determining always just the right time to churn, so that constant variations in the quality and conditions of the butter are prominent features observed by every dairyman.

The mechanical process of ripening cream, invented and introduced by a prominent expert in dairy matters, claims to do away with all the guess work and chances of former times, and it is confidently asserted, backed by unimpeachable testimony, that fine aromatic butter can be then automatically produced, uniformly and without fail.

Improved methods of preparing the butter for market and for packing are constantly being developed; the old dash churn—objectionable because of the difficulties in keeping the parts sweet and clean—has been pretty generally replaced by the more modern box or barrel, containing no dasher at all. By the use of this form of churn, better facilities are offered for washing and salting the butter in the granular condition, more thoroughly cleansing it of buttermilk, thus insuring better keeping qualities and less working with the ladle, or otherwise the buttermilk is washed out instead of being pressed or worked in, which does more or less damage to the finer qualities always. It is only a question of time when the butter-worker, like the old-fashioned crock, will take its place in the lumber room as a thing that has out-lived its usefulness and become a relic of the past in the dairy. Careful granular washing and salting in the churn will render the use of the butter-worker altogether unnecessary.

Butter offered to the consumer in neat and attractive form is much oftener seen in the markets now than formerly, and the price of really first-class butter is proportionately higher and more readily sought. A convenient device for making these packages employed by the best butter makers is in the form of a box or press holding an engraved block which gives its imprint to the butter, producing a very pleasing effect. The capacity of the box is adjusted so nicely that weighing is entirely dispensed with, the difference in weight of each lump of butter as it passes through the "print" being so trivial as not to be detected when proven by the scales.

Improvement in the qualities of butter, which naturally carried with it an advance in price, is traced to the introduction of the Jersey cow into this country;

and as her extraordinary value for producing fine butter became known, her own popularity and that of her product increased. The onward progress and advancement has been steady and without a break ever since.

To the race of Jersey cattle—supplemented by the use of improved appliances for separating the cream, its after care, and manipulating the butter—is due most of the honor and credit of the finer possibilities of the butter of the present time. The amount per cow has been doubled, and the quality—other things being equal—if always of the best. The Jersey cow is peculiarly and specially constituted for making butter, and all the conditions of her product point conclusively in that direction; her milk is rich in the fats of butter, the cream separates more rapidly and more thoroughly than that from any other breed. Besides being greater in bulk, butter is obtained more easily and promptly, it being solid and firm, can be handled with greater ease than butter made from other breeds, it retains its flavor longer, and at every step of the process ample proofs abound that her mission is one of butter; not only of fine butter increased in quantity, but it is produced economically from the food consumed. This has been so often demonstrated that it is familiar to every one who reads.

The improved creamers, the separator, the automatic ripening cream vat and the fermenting can are powers in the dairy room; they have accomplished wonders in elevating the standard of butter and as aids in producing an article of greater excellence and more uniformity, and higher achievements still will doubtless follow as the results of man's ingenuity and skill, but the product of the Jersey cow will remain as from the first, the principal factor in making good butter. Science and skill intelligently applied will assist in preserving desired qualities in the milk and butter, but nature must first have implanted the inherent power to produce those qualities. This is outside of man's province. In this respect nature has singled out and favored beyond all comparison the Jersey cow, and crowned her queen.

Officers of the Association were elected, as follows:

President—D. H. Jenkins, Indianapolis.

Vice-President—Dr. D. W. Voyles, Crandall.

Secretary—William C. Smock, Indianapolis.

Treasurer—H. H. Wheatcraft, Greenwood.

Members of Executive Committee—To serve for three years—E. J. Howland, Mrs. Kate M. Busick and Mrs. George Jackson.

SUPPLEMENTARY.

The two papers following are presented in connection with "Jersey matter," the subjects discussed being of vital interest to every Jersey cattle breeder.

BUTTER MAKING.

MRS. L. D. WORLEY.

The three cardinal points that determine the grade of butter are flavor, grain and color. Flavor is dependent on a number of small things; the milk must not remain long at the stable, it must not be set in a room with vegetables or coal oil, or in a damp, mouldy cellar. It must not set too long before skimming, or too long before churning. All the cream will rise in six hours in a temperature of forty-five degrees; in twenty-four hours at fifty degrees; from fifty-five to sixty degrees, it requires thirty-six hours; over sixty degrees, the milk will sour before all the cream rises.

The degree of acidity for churning is a much disputed point. The West Virginia Experimental Station advocates not ripening the cream at all, but churning it sweet, running the buttermilk a second time through the separation. Some good dairymen say a slight acidity is necessary, while others prefer a thick clabber. Experience teaches that over-ripening is fatal to good butter, and if not soured enough there is a loss in butter. Cream should be ripened in about twelve hours. If two or more skimmings are needed to make a churning, keep the cream at a low temperature until ready to set to ripen; pour all together, cover closely and keep at a temperature of about sixty-five degrees.

To stir, or not to stir, is still an unsettled question. Mr. John Boyd and Governor Hoard say, "stir not," while Messrs. Crosby and Gould contend that the cream should be stirred "early and often." I stirred cream faithfully for ten years, but not for the past four years. For a small amount of cream, poured into a can at different times, it may be best; but I think a plan answering the purpose better is to use the strippings to swell the bulk for churning; it makes better butter by avoiding too long standing of the cream.

Undoubtedly the very best butter is made by churning the cream from each milking separately, but conveniently and with profit this can only be done in large dairies.

The regulation churning temperature in the Middle and Northern States is 62 degrees, but some of the best butter makers of Texas assure me they are obliged to churn at 70 to 75 degrees, to obtain uniform and best results. Food may possibly influence this feature.

The mode of setting the milk also affects the flavor of the butter. Milk should not be covered until it is cold, and the animal odors have escaped; then it should be closed tight, or better still, submerged. Glass cans are preferable to either tin or earthenware. In my own dairy I am now using a DeLaval Horizontal hand Separator—cooling the cream after it has been separated before setting it to ripen; it makes no better butter than the old way, but the separation is closer and it saves labor. I have not tried Mr. Boyd's cream starter, as I find a little sour buttermilk

answers the purpose and is less trouble. The grain of butter is injured by over-working as well as too much warming of the cream, and by using a dash churn. Prof. Stockbridge, of Purdue, says that butter is nearest perfect in the granular state, but as we can not very well send it to market, so it must be worked into shape. Butter with a proper grain should look like the broken ends of a bar of steel.

Butter should be thoroughly washed in the churn, and salted there. A noted butter expert of the Elgin district says that the proper salting of butter is a point in the business too often neglected. Evenness and the employment of the very best brands of dairy salt are absolute essentials in making the finest butter. Brine salting is, perhaps, to be preferred.

How much salt to the pound of butter? is a question that can only be answered satisfactorily by those who eat the butter. Three-quarters of an ounce to a full ounce to the pound are the proportions in general use. My customers decide this, and I salt it to suit their taste. The Southern markets prefer more salt than those of the North.

Coloring butter is often over-done, and while, to a certain extent, a given tint is required in winter butter that can not be successfully obtained except through artificial means, the tint should not be too deep. June butter from Jersey cream is about the right thing, and can be secured by judicious use of a first class butter color. But with ensilage or winter food for the cows, artificial butter color is not necessary. When it is used, it should be stirred in the cream before churning. When butter is packed it should be re-worked and covered with linen parchment.

Long kept butter is by no means a success either in regard to fine quality or paying profits. We who keep winter dairies will always obtain better prices for butter than the best kept butter will command, even if preserved in the most approved manner by cold storage.

THE FARM DAIRY.

MRS. VIRGINIA C. MEREDITH.

I am sure that the very best butter can be made at the farm house by the farmer's wife or daughter. She may command all the conditions of success. Creamery butter is but an average—it can be nothing else. The creamery necessarily compels the degradation of some butter that would be vastly superior to its average. The creamery can not command best conditions. We have a fair field in seeking customers. Our city friends have poetical natures—O! very poetical. They are full of childhood's memories, and they love to eat their butter with reminiscent thoughts of green grass, shady brook, immaculately clean milk room, pretty milk-maid, sweet breathed heifers, clover blossoms and so on. If you will give them good butter, with all these pleasing accessories, I am sure that you have a customer—a life-long customer—for your home butter.

So many things must meet in perfect combination if fine butter is to be produced, that it is not possible to say which is most important, and one is in something of a dilemma in deciding at what point to begin a discussion of the subject.

In the selection of a cow, the first thought that suggests itself is breed, for if we are to get great returns, profitable returns, we must have long inherited excellence to draw upon—qualities inherited in the breed to a much greater degree than many are willing to admit. Take for an example the Southdown sheep; its mutton is incomparable, and is it not purely a matter of breed? Those who are informed are aware of the fact that all the known breeds of cattle have produced phenomenal milk and butter cows. The phenomenal, however, does not interest us except as it demonstrates the very great possibilities in all breed if feed and care are intelligently bestowed. It is the fashion to call the cow a machine—the likeness is a notable one and particularly at one point; a machine is valuable in proportion to the intelligence exercised in its management.

We should seek those breeds that have been bred with intelligence for a tendency to respond quickly to the best food, prepared in the best way and given in the best combination. We all know that cattle raised upon the range can not be put upon corn and fattened at once as can our Middle States cattle—time is required to bring the digestive system into sympathy, into harmony with new conditions. This great principle extends through all the phases of the cattle industry. The cow will do her very best if she is tied in the same stall, grazed in the same pasture with the same companion all her life.

No matter which breed may have been chosen—the first step after choice has been made is the inauguration of a thorough system of testing—a pound a day of butter is the very least that should be accepted from any cow kept for butter, the cow that produces less is usually kept at a loss. Your own cows in your own pastures and barns is a problem unlike that of any one else, and you alone can reach an intelligent solution. It requires patient and persistent effort to follow to its ultimate result a system of testing; but is it not true that only by the application of business sense and business methods that maximum results can be attained? Choose a cow that is strong and robust; do not lay too much stress on the old maxim of being “wedge-shaped;” a fine appetite can only go with a robust constitution—a robust constitution is indicated by good lung and heart development; can not be squeezed into the narrow point of a wedge. A fine appetite is essential to a good milker; of course, a cow may have a fine appetite, and make beef instead of butter, but the fine appetite she should have in either case. Strive for a cow that eats “a great ration” and assimilates it, not for the cow that gives a good return for a small ration; it would be economy from every point of view if one cow could be made to eat the rations of twenty cows if she would, at the same time, give the return of twenty cows. Be sure of results, never losing sight of the question to be answered, viz.: How many pounds of butter can I get from a ton of grain fed in a given time to a minimum number of cows? Testing by the scales is the only reliable mode of procedure. Some cows will give more milk and butter as long as you give more bran; others reach their limit beyond which bran is thrown away, and so with other foods. To learn which cow is cast-iron in her capacity is to attain valuable knowledge. The chemist tells us of the elements of

food; he indicates their value and the possibilities that should attend its use. Feed your cows with the chemist tables in mind, but if Brindle has inherited a digestive system that will use corn for all there is in it, but that wastes bran, find out for yourself just what is the economic ration for Brindle; it will not be easy to do so, but will it not be worth while to do so? Remembering always that it takes time for the cow's digestive system to adopt itself to changed rations, all experience for either beef or milk agree that under a change of feed there is a retrograde in production.

Grass is the real base upon which rests milk and butter production. It may be grass as we find it in the open pasture, or grass in the form of our great crop, corn—for corn is a grass. I am sure that we have never half appreciated the value of our corn crop. The silo, in its capacity to utilize the corn crop, may be on probation with the farmer, but it has probably already demonstrated its value to the dairyman. Clover hay has hitherto been considered the great forage crop for the dairy, but is it not a very expensive food? Too expensive, when we count the value of the acre; when we consider the busy season and uncertain weather coincident with its curing.

All authorities agree that the persistent milking habit should be induced in the heifer with her first calf. That old-time practice of "breaking the heifer" has become obsolete in these days, when comfort is recognized as an essential part of the cow's treatment, and the calf is, from birth, the object of attention and solicitude. When the milk leaves the udder it enters the domain of water.

The one-legged milking stool has not been superseded by any new-fangled invention, and, as in father Adam's time, milking with both hands is the correct style, but they do say, that the hands should grasp diagonally opposite quarters of the udder, and that the side should alternately receive first attention, thus insuring the more equal development of the udder. The quarter first drawn admits a part of the milk held in reserve and the consequent pressure and distension tends to unduly enlarge a quarter that is constantly and habitually first emptied.

Men can do better milking than women but they do not. It requires great strength in the muscles of the wrist to milk a cow quickly, the man has that; it also requires gentle manners to induce the cow to "give down" her milk, not always the man has that, but the connection between polite behavior and the pocket-book is so close that in real dairies we find the most gentle manners. We even read that in New York—in the great cities—at the stables where are kept the high bred road horses of gentlemen, the use of profane language is forbidden, and, aside from considerations of morality, it is entirely just, because profanity, to be gratifying to the user, must be accompanied by some vehemence of enunciation, the raised voice and nervous tone will excite a high bred animal, and the excitement produces most deleterious effects. There is philosophy, deep philosophy, in repose, whether in the parlor or in the barn.

Cleanliness in its relation to milk is well understood. Would it were well practiced. After the milk has been got into the bucket—into the pail—it enters the domain of invention. It would vex the temper of a saint, should a saint be compelled to examine and to judge all the inventions for taking care of milk and butter. Think of the long line of churns that would be marshalled for inspection.

The primitive churn, the device used in Oriental countries, embodies what I shall venture with proper respect to call the essential and correct principle—movement without agitation—a skin when nearly filled with cream is suspended by a string from the limb of a tree, and being pushed back and forth accomplishes its purpose as well as the rectangular churn, the swinging churn of to-day. Inventors seem to have gone daft on time, as if it were veritably money, by a multiplication of cogs, dashers and cranks they give to the cream a motion as rapid and tortuous as can be imagined. Is not temperature rather than agitation the condition of quick churning? And is very quick churning desirable—really compatible with the production of the best butter? Temperature to such a great degree determines what will be the quality of the butter that that fact alone, to my mind, is conclusive evidence that the very best butter will ever be made at home and not at the creamery; for after the milk is drawn from the udder the sooner it is at rest at a proper temperature the better will be the results. By deep setting it seems the most favorable conditions are secured for controlling the temperature.

Prize butter has been made by good house-wives that never used a thermometer; good butter was made before thermometers were made, but it was made by the aid of a judgment as reliable as the thermometer. Thermometers now-a-days are more come-at-able than good judgment. This judgment attained good results under conditions that were correct—that would have been indicated by the thermometer as correct. The thermometer and good practice can never collide.

Uniformity is the test of our ability in all lines, but peculiarly so in butter making. While undoubtedly fine butter can be, and is, made from milk set in gallon crocks and churned in a dash churn, yet that is not the system best calculated to secure uniformity in the product. All progress in butter making is in the line of more work, not perhaps real manual labor, but more work is put upon the milk, the cream and the butter by the use of improved utensils, improved methods and improved cows.

An eastern writer says: "I know butter tasters who are paid \$5,000 a year simply to test butter." Your butter must go through this in the great cities. If such high priced talent is employed to select from the great mass of butter the particular package suited to the palate of the epicure, you may be sure there is a subtle aroma, an exquisitely delicate flavor that is not found in the ordinary dairy product.

There is an unfailing, increasing demand for the best, and there is a good reward for the maker of the superior article. "Aim at the sun" would seem a good motto for those engaged "in producing a golden grain of butter."

TROTTING AND PACING HORSE BREEDERS.

The Indiana Trotting and Pacing Horse Breeders' Association met in the Lecture Room of the State Board of Agriculture, January 16, 1890, at 1 o'clock P. M., and was convened promptly by President Chas. E. Wright.

In the absence of Secretary J. S. Darnell, Clinton L. Hare was appointed temporary Secretary.

The roll call showed present, E. J. Robertson, J. N. Dickerson, Horace Wood, Geo. Campbell, Mr. Blazdell, M. L. Hare, Fisher's Switch; B. T. Buford, Danville; R. J. Wilson, Rushville; J. S. Darnell, Lebanon; N. A. Randall, Indianapolis; M. F. McHaffie, Stilesville; J. L. Bradley, Edinburg; C. F. Bowen, Danville; Caleb Jackson, Centreville; H. E. Davenport, Sheridan; E. A. Allman & Son, Waverly; Omer Bland, Edinburg; Cope & Hunter, Brownsburg; Dr. C. E. Wright, Indianapolis; F. M. Rottler, Indianapolis, and Clint L. Hare, Indianapolis.

Dr. C. E. Wright, President, delivered his annual address, as follows:

PRESIDENT'S ADDRESS.

GENTLEMEN—The name of the colored astronomical genius who solemnly asserted 'De sun do move,' has escaped my fickle memory; but as his fame will doubtless be sung by future historians, I will leave him and his theories to posterity while I devote my attention to terrestrial, and to coin a word, *hippological* affairs.

The proposition that the world moves can not now be successfully controverted; yet it may not be amiss to still further strengthen the force of the axiom by adducing as proof the change of public sentiment regarding Hoosiers and horsemen. Not so very long ago the term "Hoosier" was considered almost a reproach and even synonymous with stupidity and clownish *clodhopperism*, while denominating one a *horseman* was almost as bad as to apply to him the epithets of gambler, sharper or low-bred rascal.

Now, thanks to the enlightened progress of civilization and discerning justice, this state of affairs has been considerably modified, even if it be not entirely changed. The Hoosier is not now ashamed of his patronymic denomination; he is proud of his title. He does not acknowledge the definition *husher*, but claims to be a *hustler*: for he is a hustler in all the paths and avocations of life, and in no department is he barred from entry. He is fair in his dealings with his fellow men and always "scores by the pole horse." He will *distance* his competitor if he

can, but will make a square race for the purse even if he gets the flag himself. The genuine Hoosier is a hustler in politics, in religion; in the polite arts and sciences, in literature, sociology and astronomy, and all of the *alogies* and *onomies*. He considers himself equal to any occasion, and if there be any urgent requirement to "git thar," like "Eli," he does it every time. Nor does he greatly overrate himself and his abilities either, for in peace he is a power and in war he is immense. He thinks he can do anything he undertakes, from plowing a patch of corn to administering the affairs of the greatest nation on earth. The Hoosier is on top and he has come to stay. He is a proud mortal, too—proud of his country, proud of his State, proud of himself; and his State pride is not limited to the confines of a political campaign. He is glad that he is alive and that an allwise and beneficent Creator has placed him in the garden-spot bounded by the geographical lines which encompass the great State of Indiana.

The horseman, it would seem, has undergone a similar metamorphosis. He used to be a *hoss-man*, and is represented as having been an ignorant, ill-smelling, bloated and boisterous braggart. Now the public will allow that the lover of the equine race may be at the same time a refined and cultured scholar, a polished, educated gentleman, who is more deeply interested in horse-breeding problems than in pool selling or gambling; in fact, a practical scientist and political economist whose desire to benefit his fellow men may be greater than his delight in winning a paltry purse.

The *genuine* horseman of to-day, and of the future, is, and will be, the peer of the proudest and purest in the land, permitting none to pass him in the exercise of honor or honesty. The true horseman respects himself and is respected by his fellows. His word is considered equal to his bond. When he speaks he is believed. His statements as to the qualities and pedigrees of animals vouched for by him are received without question of their correctness. He acts squarely with himself and others.

Now, if you will but couple the terms "Hoosier" and "horseman" and to the result apply the attributes I have attempted to portray as belonging to each, you will certainly create a model for all mankind to copy. Then associate a number of these gentlemen and you will form such an organization such as the Indiana Trotting and Pacing Horse Breeders' Association should be, and which it is our own fault if we are not.

I need say nothing of the honor of being chosen to preside over the deliberations of such an ideal body.

It may be inferred from what has been said that I believe the Hoosier and Hoosier institutions are perfect, but such is not the case by any manner of means. Our people do not know their own wealth and resources. Our mines are not fully developed, and there are minerals sufficient to enrich numberless generations in the future. Our farms are not tilled to one-half their capacity. Our breeders do not appreciate their own importance and advantages. We have been so accustomed to yielding the palm to others, so in the habit of slightly referring to State pride and granting to others the superiority claimed by them, so modest, belittling ourselves, that we have greatly overlooked our own position in the great aggregation of great States, even to the extent of doing ourselves rank injustice.

We have a great State, and what I shall have to say of any other commonwealth in the Union need not be considered in the light of disparagement, but of actual praise, because it is to the credit of any State to be even compared with Indiana.

In placing before you the figures and my comments on and conclusions from them, I have not the least desire to detract from the fair fame of Kentucky and her noble sons. I honor Kentucky and admire her citizens, and if I shall unintentionally offend, I crave pardon in advance. Kentucky has done a noble work in rearing and developing the trotting horse, and right well has she been paid for her trouble. All honor to Kentucky and all honor to the Kentuckians who have dared to do right, even in a horse trade! Nor would it be right to withhold their need of praise from such men as McFerran, Withers, Alexander, and scores of others who have placed the standard of conduct too high to be easily lowered, and by their lives have set worthy examples of honest dealing.

The name of Kentucky has become almost inseparably connected with horse breeding interests, and to such an extent as to lead some almost to the belief that a good horse can not be reared outside her confines. Yet with all the talk about Kentucky horses and Kentucky blue grass, it may be truthfully claimed that Indiana has as good horses, has *more* horses, as much, if not more blue grass, and of as good, if not better, quality than Kentucky herself.

I will not here insist upon the truth of the statements of some historiographers, so offensive to Kentuckians, that this State is the natural home of the *poa pratensis* or blue grass. It may be indigenous to both localities.

Beal, "Grasses of North America," p. 135, quotes a Kentuckian as saying: "Whoever has limestone land has blue grass; whoever has blue grass has the basis of all agricultural prosperity, and that man if he has not the finest horses, cattle and sheep, has no one to blame but himself."

In the same volume we find that, "besides some portions of Kentucky, there are also a few counties in Ohio, Michigan and Indiana" in which blue grass is found. This from a pretended scientist, who should spare no efforts to inform himself of the facts in the case. "Facts are what we want," said one, and we need positive physical facts, able to stand on their own merits without adventitious metaphysical assistance.

Beal, "Grasses of North America," p. 240, says: "Strong, deep, calcareous soil, with a clay subsoil, is the best adapted for our most nutritious grasses." Have we not just such soil in Indiana, and do we not here find blue grass in the greatest possible luxuriance, where the soil is in no wise similar to that described above, on high land and low land, on dry land and wet land, on limestone land and clay land, on black loam and on sandy soil, everywhere that it is allowed to grow, in every fence corner wherever there is sunlight and soil? Blue grass with proper care can here be fed all the year round, and grows with even less care and attention than are found necessary in our sister State across the Ohio. This is the natural home of blue grass; the soil and climate are suited to its growth, and there is scarcely a county of the ninety-two composing the State in which blue grass can not be found, capturing all the space not otherwise used for tilling. We have but ninety-two counties as opposed to the one hundred and eighteen in Kentucky, but a glance at the map will show that on account of the more even surface our counties

are larger and more regular in outline than are those of Kentucky, which are irregularly platted to suit the surface, and this very irregularity of surface renders a large portion of Kentucky entirely unsuited for agricultural purposes. We have a smaller area by some four thousand square miles, but our farms are more valuable. From the "National Atlas," published in 1887, I glean the information, which is founded on statistical returns to Washington, that the cash value of farms, farming implements and machinery in Indiana is \$652,480,780, while the same items in Kentucky are valued at \$319,811,812.

In my search for information I have endeavored, as far as possible, to secure official figures, but failed in this to secure knowledge from those who would naturally be supposed to know whereof they speak. On the 5th of this month I addressed a letter to the editor of the *Kentucky Stock Farm*, asking him to "give me at once the names of the counties in Kentucky in which blue grass can be raised, and the probable acreage of same? I have asked your State Auditor for the information, but can not gain it from the book of statistics he sent me." To this letter the editor courteously replied in his paper of the 9th inst., as follows: "Ans.—There is probably no county in Kentucky in which blue grass can not be raised. It flourishes best in what is commonly called the "blue grass region" of the State, embracing the counties of Fayette, Woodford, Bourbon, Clark, Boyle, Montgomery, Scott, Garrard, Lincoln, Mercer, etc. Can not give the acreage.

In Indiana the difficulty lies not in selecting the counties in which blue grass does, but in determining those in which it does not grow, and we have an aggregate, as actually reported, of "2,099,986 acres of blue and other wild grasses." Over this vast expanse of pasturage nearly 600,000 horses roam.

The volumes published by the Indiana Bureau of Statistics and the Kentucky State Auditor were the latest that I could obtain, and by correspondence other information was gleaned. The following is a letter from the Chief of the Indiana Bureau of Statistics, dated,

INDIANAPOLIS, Nov. 2, 1889.

Dr. C. E. Wright:

MY DEAR DOCTOR—I received your letter of the 25th ult. some days ago, but have postponed answering till the tabulated statement for 1889 could be made. I, therefore, hand you below the exact figures as shown by the assessors returns for the present year.

Yours very truly,

W. A. PEELLE, JR.

Number of horses, 1889, 593,275. Per cent. of increase, .013. Number of acres in blue and other wild grasses, 2,099,980.

The report of the Kentucky Auditor, 1887, contains a very queer table of "2,353 studs, bulls and jacks," a singular combination for statistical purposes, especially when the definite number of each is not stated. The acreage of "meadow and woodland" is given, but the amount of land devoted to pasturage is not mentioned.

There were in 1887, 374,072 horses of all kinds in Kentucky, and, granting the same per cent. of increase to that State that we find in Indiana, there should

have been in 1888, 378,934 horses of all kinds, and in 1889, 383,860 horses of all kinds. To be sure, the rate of increase on nearly 400,000 would naturally not be as great as on nearly 600,000, but I give Kentucky the benefit of the difference.

We find the distinctions, "thoroughbred stallions," thoroughbred geldings," "thoroughbred mares and colts," "stallions, common and mixed stock," and "geldings, mares and colts, common and mixed stock," but no reference to trotting and pacing horses, which evidently are included among the thoroughbreds.

If my figures are correct, and I believe them to be so, Indiana has now over 200,000 more horses than Kentucky.

To feed this vast army of horses we have plenty of food, far more than Kentucky has for her equine property.

In 1888 Indiana produced 128,436,284 bushels of corn, but this was an exceptional year, and the reports for Kentucky are not yet in, or at least I could not secure them.

In 1887 Indiana raised 70,017,604 bushels of corn; in 1887 Kentucky raised 42,110,937 bushels of corn; difference in favor of Indiana, 27,906,667 bushels of corn.

In 1888 Indiana raised 2,860,338 tons of hay; no report yet from Kentucky.

In 1887 Indiana raised 3,272,334 tons of hay; in 1887 Kentucky raised 243,470 tons of hay; difference in favor of Indiana, 3,028,864 tons of hay.

In 1888 Indiana raised 27,493,851 bushels of oats; no report yet from Kentucky.

In 1887 Indiana raised 24,378,984 bushels of oats; in 1887 Kentucky raised 3,692,729 bushels of oats; difference in favor of Indiana, 20,686,255 bushels of oats.

These figures are official, and can be seen by any one interested in looking for them. Certainly there can be no reasons for falsifying the returns, and as they are made for taxation and for statistical purposes, they are presumably correct.

My figures have been honestly given; my words are honestly meant. If either have offended I am sorry, as no offense is intended.

It needs but a moment's consideration to demonstrate our superior advantages and facilities for horse-breeding. We not only have a large number of horses, but we have as good as any to be found anywhere, and this statement none can gainsay. We are in need of certain requisites to make successful paying horse-breeding a certainty in Indiana, but these do not apply to climate, land, food, nor quality of horses. We have the food and pasturage; we have some of the greatest stallions on earth within our boundaries; we have the capital to buy what we want; we have a climate equal to any; we have the brains to breed the best.

To avoid invidious and offensive comparisons I shall mention only the names of a few of those horses that have records themselves or have sired performers—though there are many within our borders without records which are the peers of any. Axtell's name, like Ben Adhems, leads all the rest; "Fastest stallion in the world," and which sold for more than one-half as much as the assessed value of all the 265 thoroughbred stallions in Kentucky in 1887.

Strathmore, standing at the top of speed producers, and Hambrino, who trots, breeds trotters and gets trotters that again beget their kind. Old Sam, or Blue Bull, who alone and unaided was mightier than his contemporaries with all the

potent help they received from speed-producing dams, and who through his sons Jim Wilson, Cook's Blue Bull, Blue Vein, Brussels, Little Wonder and others, is still adding wealth and honor to our commonwealth.

Blackwood, Jr., just died, trotted and got trotters, as do The King and Haw Patch, as did Hambletonian Tranby and others.

Among the pacers Indiana can likewise hold up her head. Red Bell, though sired by a Kentucky horse, is owned and stands in Indiana. Yet his sire was by a horse not raised in Kentucky, and out of a dam by a horse raised elsewhere.

Pocahontas Boy (2:31) sired American Boy (2:26) who in turn sired Billy Stewart (2:19½). Do not Indiana horses breed on?

Legal Tender, Jr., fast himself and a sire of speed, is another evidence of on-breeding.

There is no dearth of well-bred stallions nor of good individuals of even questionable breeding to be found, and the lover of standard and of non-standard animals, with or without pacing or thoroughbred crosses, "close up" as they wish, or "far back" as they choose, may find satisfaction in almost any county.

We have plenty of stallions as well bred as any living; sons of George Wilkes, Electioneer, Hambletonian, Auditor, Red Wilkes, Belmont, Wedgewood, Harold, Princeps, Sultan, Bismarck, Egbert, Mambrino Patchen, Blue Bull, Nutwood, Pancoast, Don Cossack, Onward, Phallas, Aberdeen, Happy Medium, Dictator, Ambassador, Smuggler, and a host of others equally as good.

It may be claimed that many of these are sons of Kentucky stallions, but the horses that have given her wealth and reputation have not all been raised in Kentucky, but were sired elsewhere. Among these may be mentioned Alexander's Abdallah, Mambrino Chief, Pilot, George Wilkes, Egbert, Banker, Sherman's Hambletonian, Auditor, Sultan, Bismarck, Marcey's Hambletonian, Harold, Happy Medium, Dictator, Robert McGregor, Aberdeen, Smuggler, and others, the progenitors of the best horses ever raised on the dark and bloody ground. Nor are all the successful sires owned in Kentucky, as will be seen by considering the claims of Electioneer, Kentucky Prince, Pilot Medium, Nutwood, Pancoast, Strathmore, Sydney, Smuggler, Hambrino, Ambassador, Haw Patch, Wedgewood, Mambrino Boy, Dauntless, Magna Charta.

The fastest tracks are not in Kentucky, and she has none that will equal the track at Terre Haute.

If I am correctly informed not a single one of the fastest trotting and pacing records was made in Kentucky.

Kentucky may raise fast and high-priced horses, but she does not keep them. Sunol, Maud S., Johnson, Axtell, Palo Alto, Belle Hamlin, Patron, Guy, Jay-Eye-See, St. Julien, Stamboul, Alcryon and Nelson do not belong to Kentuckians, nor do the ones which sold for the highest prices, such as Axtell, Stamboul, Patron, Sunol, Maud S., Jerome Eddy, Nutwood, Bell Boy, Pancoast, Acolyte, not to mention the large number of horses for which Robert Bonner has paid such "panicky prices."

At the recent horse show held at Chicago a Kentucky horse did not win first nor yet second prize.

I have been told that the horses wintered in Kentucky are not in as good condition to undertake their spring work as those wintered north of the Ohio. The solution of this question I leave to those interested in following the circuits.

There is a scheme to locate a cavalry post of the United States army in the West somewhere. Would it not be to the interest of our breeders and citizens generally to look after this matter? Have we not the arsenal grounds, belonging to the government, that could be used for such a post? Have we not the horses to furnish, and the food to supply them with nourishment? Have we not the leather for the accoutrements, and the workers to put it in proper shape? Why not place a knowledge of our advantages before the proper authorities?

We need unity of purpose among our breeders, and more united work. We need to place this Association upon a business-like basis, and fulfill our contracts like business men. We should take more interest in the success of our society, and work in harmony for each other's interests. If a purchaser asks an opinion of a horse belonging to another, we should give the horse his just dues, even though we may not love his owner. If a purchaser does not like your horse give your neighbor's stock the advantage of a just and truthful recommendation, and, like bread cast upon the waters, the good deed will be returned in kind at some future time. It is not wise to drive customers from the field by making them unjustly suspicious of all stock offered.

We need respectable premiums offered by our agricultural societies and of sufficient amount to justify breeders in exhibiting their stock.

We need to show our people our horses, and encourage a love for good stock. To this end I would suggest a show of horses at our speed meetings, herds, etc.

We need well bred mares, good individuals, performers and producers of performers. We need young mares bred in producing lines, and not the worn-out old "plugs" that are put to breeding after their periods of usefulness in the plow and milk-wagon are things of the past. We need sound mares, and not those which are expected to earn their living while recovering from temporary lameness or other disability by raising foals during periods of enforced idleness. Sound, well-bred mares should not be allowed to leave the State for want of local purchasers; their removal would be a blow to political economy.

If our object is to breed trotters and pacers, and we find that certain blood lines united tend to the production of the trotting or pacing gait, let us breed in those lines whether or not they are in accordance with our own preconceived theories. To one who desires to establish a trotting or pacing stud, it should matter but little whether the individuals composing it belonged to one or the other great families, so long as the result obtained is that sought for—the production of colts that trot or pace.

Let us breed according to our own notions, and permit our neighbors to do the same. Surely the one whose stock is able to win in the contests for speed will more certainly demonstrate the superiority of his methods than he whose colts could not distance the painted image of a crippled horse which decorates a veterinary surgeon's sign as it swings in the breeze.

We need to stop heated and prejudiced theoretical discussions of unsettled questions, to quietly and calmly observe the phenomena of nature, well knowing that

she will have her way despite our bickerings and quarrelings, which can but cause ill-feeling and prevent the elucidation of the subject under consideration.

Individually, I do most heartily endorse the "standard," because I believe it to be the result of the ripe experience of men deeply learned in breeding problems, and because by following the standard I believe my chances for raising trotters are greatly enhanced. And yet I can respect the opinions of one who differs with me and is willing to risk his chances on his own judgment.

The address of the President was enthusiastically received, and highly complimented by several members of the Association, who denominated it as an exhaustive treatise on horse breeding in Indiana.

Secretary Darnall arrived at this juncture, and submitted his annual report.

Treasurer A. C. Daly submitted his annual report, showing

Receipts to January 15, 1890.

Balance on hand January 22, 1889	\$728 34
Received on account of membership fees	190 00
Donations	120 00
Dues	280 00
Entry fees	588 00
Admission tickets	385 00
Vehicle	16 70
Total receipts	\$2,352 09

Expenses.

Paid out on orders from Secretary	\$2,195 78
Balance on hand	156 31
Total	\$2,352 09

The President called for volunteer papers, and George Campbell, of Rushville, read the following paper:

"THE BREEDING PROBLEM AS IT RELATES TO OUR OWN STATE."

It is a fact that only needs to be stated to be accepted by horsemen, or even casual observers, that Indiana is not abreast of many other States of the Union in the uniform production of a high order of turf performers. For instance, we are excelled by Kentucky, California, New York and probably some other States. This should not be so, for as a matter of business profit (as well as State pride) we can not allow the breeding interests of our State to be second to any in the Union. And, I may add, we do not have to, for God, in His beneficence and the distribution of His providence, has smiled as kindly upon us as upon any other commonwealth. Our soil is as rich, the water is as pure and as well supplied with the proper elements of growth, our oats, corn, timothy and clover as plentiful and rich as that of any State in the Union, and I may add that the blue grass of

Indiana is more abundant richer, and in every way better than in any other section, not excepting the much-mentioned blue-grass region of Kentucky. Indiana blue grass is most prolific and strictly standard under all the rules. So it must be admitted that we are not deprived of any of the natural conditions most favorable to the best results. Therefore, if it be true, as stated in the outset, that we have fallen below the attainments of other States in the uniform production of a high order of turf performers, this result is due either to lack of effort and enterprise on the part of those who have been and now are the horse breeders of the State, or to lack of judgment. This conclusion is incontrovertible. The argument is intended to be general and not as reflecting on any individual breeders. It is impossible for a few progressive breeders, with ideas, to give character to the general breeding interests of a State.

So far, it has been the sole purpose of this paper to get before the Society a proper view of the situation as it actually exists in Indiana to-day. However imperfectly this has been done, we have endeavored to state it truthfully and fairly.

The result to be attained, which has already been alluded to, namely the production of a high order of performers with uniformity, necessarily implies all the conditions that can be desirable in the breeding problem. For instance, if an animal is a trotter of a high order, it necessarily implies a sire and dam capable of producing such an individual, and, likewise, if the breeders of a State can turn out a thousand such performers, it necessarily implies sires and dams capable of producing them, and when you have these you have all that is essential to profitable breeding, which is the ultimate consummation desired.

Now, to come down to the strictly practical, why have we not, as a great breeding State, produced a larger number of such performers? It can't be because we have bred too few horses. It is not that, but rather the contrary. If I were called upon to answer the question "what is the greatest present need of Indiana breeders?" I would say fewer ordinary stallions (because ordinary stallions produce ordinary offspring—a fair deduction) and a great many more extraordinary brood mares (because extraordinary mothers produce extraordinary offspring—a fair deduction also.)

I want to give emphasis to the fact that there are too many ordinary stallions, though they may be "standard" as the term is used. A stallion, in this advanced year of Our Lord 1890, that is not very highly bred, an extra individual and endowed with an uncommon natural speed is unworthy to be a stallion. The tendency of the last two or three years among breeders, alleged breeders, and would-be breeders has been greatly toward over-running the State with this ordinary stuff, and I have no hesitation in saying that if these same alleged and would-be breeders could be led to understand their own best pecuniary interests, there would soon be in the State from three to six hundred less "peunyroyal" studs, and from three to six hundred more fairly good geldings and roadsters, a consummation devoutly to be wished.

We have a great many noted stallions in the State, that come up to the conditions above set out, among them game performers and strong producers of demonstrated ability. All that these need to make our State fairly teem with trotters

and pacers is a large increase in the class of brood mares heretofore mentioned. Within the last two or three years, the ideas of thoughtful breeders have greatly advanced as to the quality requisite in brood mares. There has been a baleful tendency, especially among breeders of limited experience, to lay in and breed any quality of stock, the only necessary qualification being that it could be squeezed into the standard, under some rule. This is the greatest mistake any new breeder could make. My suggestion to any breeder who finds his farm stocked in this way is to proceed at once to sell five or six, or even ten, and take the proceeds and buy one good one. The produce of this one good one will bring more than the produce of the ten. And the feed bill and labor will be ten times less. Right here it may be well to have some clearly defined ideas of what constitutes good brood mares. In the first place, and as a matter entirely preliminary, don't pay the slightest attention to rule 7 or 8, of the problem of thorough blood in the trotter. There are points of test that place the whole matter on a plane entirely above all these. The first requisite is a good, strong sound individual. Don't overlook that. Having this always in view, I take it that the lowest type of a brood mare that can be called good, in this enlightened era, is one whose blood lines, uniting through sire and dam, and second dam, trace to fashionable families—that is, to families universally recognized to be strong producers. Here is a brood mare based on individuality and blood lines alone, with no individual producers or performers in the line of dams, either near or remote. This kind of a mare to be desirable ought to have at least good action and some natural speed.

The next higher grade than the one just mentioned, is the mare with fashionable top crosses, and one or more producers or performers in the remote dams, say in the third or fourth dams, or both.

The next higher grade is the mare with a well bred sire, and whose dam is a producer or performer.

The next type is the mare who is herself a producer or performer, or both, and the very highest type is that which combines all or the greatest number of these qualities.

To be more general, a pedigree is more valuable in proportion: 1. to the number of producers and performers represented in the individuals that appear in it; 2. in proportion to the degree of speed represented by those individuals; 3. in proportion to the proximity of the performers and speed producers to the top cross, or in other words, to the particular individual that may be under consideration, and 4. in proportion to the degree of speed, or degree of potency nearest to, or centering in, the particular individual.

Within the limits that I have tried to define, it does not make any difference whether thorough blood crops out or not, or whether pacing blood crops out or not, for both thorough blood and pacing blood are speed producing, and if the gait has been diverted from the original tendency, either by education or amalgamation, the speed-producing quality of the blood does not, therefore, cease, by any means. It has been thoroughly demonstrated that both, or either of these, blood elements will unite and coalesce with the predominant elements of the trotter, and result in a performer of a very high order, and whatever has been demonstrated to be good, need not be particularly feared or shunned. Allow me to insist, however, that the

supreme test and guide, in the selection and use of brood mares, should be the individual qualities of speed, or the power to produce speed, that center in the individual, as an inheritance, through a line of producing individuals. As for me, I will stick to lines of speed producing individuals, generation after generation, let those lines lead me where they will in blood elements, even into thorough blood or pacing blood, if needs be, rather than stick to the best, purest and most fashionable trotting blood on earth, where the individual producers are absent; and especially is this principle applicable in the female line — the line of successive dams.

In conclusion, let me urge with all the strength of deep conviction, that only within the limits thus imperfectly defined, can we as breeders hope to succeed with any degree of uniformity in the production of a high class of performers. Outside of these limits, both as regards sires and dams, there is the strongest probability of failure. It may be urged as an objection that breeders of limited means can not afford to place themselves upon this plan. In answer to this I would say, with great emphasis, they can; but in order to do so they must reduce their stock numerically, and enhance their stock intrinsically. By this course they will have much better material from which to develop trotters. Not only that, but they will have fewer animals to maintain and develop, and, having fewer animals to develop, can bestow more time, more effort, more skill and more thought on what they do have, and will most assuredly produce more performers.

R. M. Lockhart presented a claim against the Association for rent of Exposition track in 1888, before he (Lockhart) as contractor turned the new track over to the State Board of Agriculture.

On motion of E. J. Robinson, all outstanding claims were referred to the Executive Committee, and the committee instructed to meet at an early day that the claims may be adjusted.

Clinton L. Hare, of Indianapolis, submitted the following on

"TROTTING HORSE FAMILIES OF AMERICA."

At the present time, and probably as far back as any of us remember, the trotting horse is and has been the most familiar to us, and it is difficult for us to think that there was a time, and that not very long ago, when the trotting horse was unusual. But such is the case, and it may prove interesting to take a brief retrospect and trace the history of a family of horses that have been the wonder and pleasure of the whole world and of the United States particularly.

The theory long prevailed that the trotting horse was the result of mere chance and for a long time no effort was made to trace his genealogy upon any tangible and reliable basis. The race horse, or as we commonly know him, the thoroughbred runner has a history running back more than 200 years, and blood asserted itself from the very beginning. The trotter appeared in England a little more than 100 years ago, and in this country about forty years later, but blood lines and breeding were not associated with the trotters that attracted any attention.

Mr. Wallace, who has done more for the trotting horse than any other man in this country, limits the origin of the trotter to a single family of thoroughbreds,

and from all the data he has been able to collect feels justified in placing at the head of this family Samsom, a horse bred in 1745 in Yorkshire, England. In time we find the blood of the Turk and Barb commingled in about equal proportions. Samson's most distinguished son was Engineer, and he has a peculiar interest for us from the fact that he was the sire of Mambrino, foaled 1768. Mambrino must have been a horse of unusual merit, judging from the commendable articles written about him by men living at that time. He is described in "Whytes' History of the British Turf," as "the sire of a great many excellent hunters and strong useful road horses, and it has been said that from HIS blood the breed of horses for the coach was brought nearly to its present state of perfection." This statement coming from a man who was no exponent of the trotting horse (for at that time the trotting horse, as a distinctive family, was unknown), and made of no other horse except Mambrino goes a long way toward proving that Mambrino was not only himself noticeable for his road qualities or trotting action, but his progeny inherited the same characteristic. It must be constantly borne in mind that Mambrino was a race horse of the greatest distinction; that he was never trained to trot; indeed trotting at that time was considered derogatory to aristocratic blood and consequently whatever trotting was done by a horse was done of the horse's own inclination. A circumstance still further illustrating Mambrino's natural desire and ability to trot was an offer by Lord Grosvenor to bet 1,000 guineas that Mambrino could trot fourteen miles within the hour. We know that it takes a horse of unusual merit to accomplish this even now, and it is a matter of no surprise that a horse able to do it over 100 years ago when, as I emphasize, trotting was frowned upon, should be regarded with considerable interest.

Only two of the progeny of this noted horse are known to have been brought to this country—a daughter Mambrina, that went to South Carolina and became widely known by her produce—a son Messenger, who was much more potent in perpetuating the records of his illustrious sire Mambrino. Messenger was foaled in England, in 1780, and was a race horse of respectable merit. He reached this country, from England, in 1788. He was in the stud from that time until 1808, standing in Philadelphia, New York State and New Jersey. Messenger was a coarse looking horse for a thoroughbred and this gave rise to some doubt about his having a pure pedigree, but examination proves him to have been as purely bred as any horse that ever lived. Not much is known of his gait, but when we consider that his offspring were unequalled as trotters, it is fair to presume that he himself was a natural trotter. He inherited it and transmitted it, hence he must have possessed it. There were no trotting contests at this time of which we have any record. Had the people of that time been told that ultimately the trotter would supplant the runner, both in point of utility and pleasure, the suggestion would have been hooted as a ridiculous one, and yet we have lived to see the supremacy of the trotter over the running family established.

Abdallah was the most popular trotting sire of his day. He was by Mambrino, thoroughbred son of Messenger out of Amazonia, a granddaughter of Messenger. Mambrino Paymaster stands next to Abdallah among the distinguished sons of Mambrino. Mambrino Chief was preëminently the best son of Mambrino

Paymaster. He probably owed most of his propensities as a trotter and sire of trotters to his sire, his dam being a large mare of questionable breeding. Ryadyk's Hambletonian is to the present generation of breeders the fountain head of trotters, and by comparing him and Mambrino Chief we find they have the same grand sire, Mambrino.

I think no one will dispute the statement that these are the two leading families in the trotting horse world. Greater results have been obtained by mingling these two strains of blood with each other and with other lines of blood than by any other combination. Do not understand that I am extolling the Hambletonian and Mambrino Chief blood as the best and condemning all other strains. What I maintain is that there is a greater certainty that you will get a trotter from these lines of blood than from any other lines. Happy results are often attained by breeding trotting bred horses to purely thoroughbred mares. A great many of our celebrated performers are from sires or dams of unknown breeding; some even are cold bred on both sides, but these isolated cases are no criterion for the breeder to go by. To breed successfully for any length of time one must breed logically on well-defined lines, and with reasonable hope that the result of such breeding will be satisfactory. In other words, approximate uniformity of result requires breeding in well-established lines of trotting families.

From these two leading families or trees a great many branches have sprung, and they are constantly adding luster to the already bright and shining record of their ancestors. What the breeders want is blood that will reproduce itself and improve from generation to generation. To say that these families have done this is unnecessary on my part. Other families have been found to nick well with these leading ones, notably the Pilot, Jr., family. Pilot, Jr., was of Canadian origin. He was a son of Old Pilot, a horse reported to have paced a mile in 2:26 with 165 pounds on his back. Pilot, Jr.'s dam was Nancy Pope by Havock, thoroughbred son of Sir Charles. Many have claimed the Canadian horses are natural trotters. But the Pilot, Jr., brood mares have attained more renown than any other branch of that family, thus demonstrating that a new infusion of blood is necessary to reach the greatest result.

The Blue Bull family is the most remarkable family of trotting horses this country ever saw. Blue Bull sprung from unknown antecedents, and about the only thing we know about him is that he was a very fast pacer. Why such a horse should sire as many trotters as Blue Bull sired has always and will probably ever remain a mystery. Whether his progeny will continue to transmit the speed of the first generation remains to be demonstrated.

I have endeavored to trace the trotting horse from his origin; to put his genealogy on some tangible basis; to draw the relationship existing among the leading families, showing how they practically have a common ancestor; to show that the truly great horses come from antecedents of good breeding; to prove that more uniform results are to be expected from the union of well-bred horses. And if I have caused any to look at breeding in a more scientific light, and have persuaded any that intelligent reasoning is necessary to successful breeding, this paper has not failed in its mission.

The President announced that discussion was in order, and called on State Auditor Bruce Carr to "open the ball."

DISCUSSION.

Bruce Carr. I am as "dead anxious for a trotter" as any man here, I know, but would prefer to sit and listen to older breeders and hear what they have to offer. But will say that in this city we have but recently organized a Trotting and Pacing Association, have joined the Western Central Circuit and expect to give races here the second week in June.

President Wright (interrupting). Yes, and at the end of that meeting I am inclined to think Mr. Carr will know more about trotting meetings than he does now. [Laughter.]

Mr. Carr (continuing). I will state that we will pay dollar for dollar, as the names of the men behind the affair are, you all know, a sufficient guarantee. We cordially invite all men here, who have trotters and pacers, to bring them along and meet with us at that time. It is an Indiana matter and you are all interested in it. We will offer purses as long as any other association in the circuit

E. A. Allman. I know horsemen are, as a rule, extremely modest. [Laughter.] I would like to hear from breeders who have long been in the business. My son and I but lately started in the business and we are on the lookout for "pointers" gained from long experience in horse breeding. It seems to me that it would be of great benefit to us all to take up and discuss these papers that have been read. It would intensify the interest and be of incalculable benefit to young breeders. I endorse the views contained in Mr. Campbell's paper, but there are one or two points upon which I want light. In establishing distinct breeds of stock I am sorry that Rysdyk's Hambletonian was not bred to some of his sons and daughters. As to the infusion of thoroughbred blood during the past fifty years we have made wonderful strides. I believe, as the last paper stated, Rysdyk's Hambletonian stands first. Great producers don't get more than 5 per cent. that bring high prices; now the question is, what shall we do with the other 95 per cent. produced? They (foreigners) must come to America to get their trotting and pacing stallions. We must have a new infusion of blood. Endurance is what we are sadly in need of. As it now stands, 95 per cent. of our horses must be disposed of as driving and road horses. A good standard bred roadster will bring \$200 to \$1,000 in the market.

M. L. Hare. I presume I am one of the modest men that Mr. Allman alludes to, but I will say that I am pleased to see the interest manifested in this meeting. To begin with all of our trotters of note descended from Messenger, and while there has been many out crosses, those bred in a line have degenerated instead of going ahead. Take the mare, Maud S, she was sired by Harold an inbred horse, and from Pilot, Junior, on the dam side. When you cross a Hambletonian to a dam of Membrino Chief, keep an eye on Mr. Allman's theory and you will see that it (his theory) will fail. Take for instance a daughter to a father and the result is invariably a failure. Mr. Bockman, of Stony Ford, New York, tried this and failed. Messenger Duroc never produced a phenomenal animal.

President Wright. How about Kentucky Prince?

Mr. Hare. He was an out-cross; always keep an eye on the out-cross when you have mares or sires inbred, then you can bring them back. Take for instance Hambletonian fillies, cross to out-cross, say to Beaumont son of Belmont. Out of Hambletonian mares; then cross from Hambletonian colt by Princeps and the out-cross will be a double infusion of blood. I crossed a mare by Edward Everett with Mambrino, the result was a dead foal. I crossed again the same way, and the result was a deformed colt which I was compelled to kill. I don't believe in breeding half brothers and sisters. Our stock originated from a thoroughbred family. My theory is take thoroughbred crosses then breed to top crosses. Don't get a line of non-producers, it is as easy to breed trotters as to grow corn. Let me select the mares and the stallion and I will breed five first-class trotters out of every six foals. Some men say they are not able to buy good bred mares. I will say that one good bred mare is worth one hundred poor ones. In regard to Egbert, he put more colts in the 30 list last year than any other sire. He is by Rysdyk's Hambletonian out of a mare by Messenger Duroc. Colonel West of Kentucky, the most successful breeder in the country, selected him for a sire. And last year he got seventeen colts in the 30 list.

Mr. Allman, Jr. I am of the same opinion as Mr. Hare, and I want father to sell off the grade mares and buy one or two standard bred mares and if he will let me do this I think I could breed to them and let him breed to his grades, and I will agree to buy him out in a few years.

On motion J. N. Dickerson, Bruce Carr and M. L. Hare were appointed a special committee to audit the accounts of the secretary and treasurer.

A letter from C. L. Clancy was read asking a number of questions of the secretary in regard to his action at the 1889 trotting meeting. It was referred to the Executive Committee.

The election to fill vacancies on the Executive Committee resulted in the selection of N. A. Randall, J. N. Dickerson, E. J. Robinson, F. M. Rottler and Horace Wood, to serve until 1893.

Adjourned to meet February 3, 1890.

The Executive Committee met February 3, 1890, in the parlors of the Grand Hotel, and after transacting business of a financial nature connected with the Association, elected the following officers:

Dr. C. E. Wright, Indianapolis, President.

Geo. W. Campbell, Rushville, Vice-President.

Horace F. Wood, Indianapolis, Secretary.

E. J. Robinson, Indianapolis, Treasurer.

Board of Censors: N. A. Randall, Indianapolis; George Morrison, Connersville; J. N. Dickerson, Indianapolis; C. L. Clancy, Edinburg; M. L. Hare, Indianapolis.

SWINE BREEDERS.

The fourteenth annual meeting of the Indiana Swine Breeders' Association convened in the lecture room of the State Board of Agriculture, State House, January 23, 1890, with President J. H. Bebout in the chair.

Messrs. Cunningham, Mugg and Hargrove were appointed to wait upon the Governor and request that he address the Convention.

President J. H. Bebout delivered his annual address as follows:

PRESIDENT'S ADDRESS.

Gentlemen of the Indiana Swine Breeders' Association:

This is our fourteenth annual convention and I trust you have all come here with more knowledge than at any former meeting, and with a willing mind to impart the same to your fellow breeders. The past year has brought about superior results to any former year. There has been higher prices paid for horses and hogs in the past year than ever was before. In 1888 Bell Boy sold for \$50,000, being the highest price ever paid for a horse to that date. The papers reported the sale and some of them expressed doubt as to its being genuine. In 1889 he sold for \$51,000 under the hammer without an expression of doubt, and but a few months ago Axtell sold for \$100,000, and the investment looks to be a good one, as his books are full at a service fee of \$1,000 each. Now as horses and hogs are the two leading stock industries, and as breeding hogs sold for higher prices the past year than any former year, we ought to surely be proud of our advancement. Although there are some journals who claim that the high prices that hogs sold for was a disadvantage to the swine breeders interest at large, and undertake to prove their assertion by claiming the great Mills' cattle sale was a downfall to the cattle business. By referring to the reminiscence of one of the oldest Shorthorn cattle breeders living you will find in his statement that Shorthorn cattle sold in 1836-37 for prices ranging from \$500 to \$2,800 per head under the hammer, and that still higher prices were realized at private sale. In 1847 yearling calves sold for five to seven dollars per head. The Mills' sale could not have caused this clash, as it came many years before. Nor do I believe that breeders in general were ever hurt by high prices. Perhaps the purchaser might be if the animal he bought was not one of high merit. What is a high price for a hog? If I am not mistaken one paper stated \$10 to \$25, and that no hog was worth more than \$40. If I was called on as an expert to describe the writer of such an article, I would state I thought his office might be

found in the seventh story of some building, and that he could not tell a Shorthorn from a Hereford, nor a Poland-China from a Jersey Red. I should think a first class sire very cheap at \$500 to \$600. I know of one that changed ownership in part at a rate of \$500, his service fee is \$15, and he has served fifty five sows for spring farrows for 1890, which brings back one and a half his first cost, and the hog is perhaps worth as much as he was when he changed ownership. Fellow-breeders, the lower seats are filled to an unhealthy condition the upper ones are almost empty. We should move upwards. We can never do it by breeding to inferior sires; neither can we by trying to talk other honest breeders' business out of existence when their average sales are double ours. Some breeder might think he could not afford to pay the price for a first class sire, as he did not have sows enough to justify it. I would recommend that two, three or more breeders, properly located, buy the best sire to be had and they will find this to be the best investment they have ever made to improve their herds. The sire can not do all the work, and you had better have a few extra sows than a large herd of inferior ones. Admit you have just what you want—the finest herd in the land—but you can not stop here; your success depends on good care and proper feeding. The best bred hog in the land, half starved, is about as undesirable an object as you could turn out. Admit we have done our work well and the pigs are ready for market, the next consideration is the best way to realize the most money. This depends on location. If you live in a good farming country I should prefer a public sale; otherwise, perhaps private sale would be the best. Fellow-breeders, do not make up your minds too soon that you know it all, but continue earnestly in search of more knowledge, and I know no better plans than to visit other breeders' herds and read all stock journals that give any light on your business—never be satisfied with one or two papers, as you might learn enough from one single article in either to double pay for a dozen. The last, but not the least, what method is best to let the breeders and feeders know what you have? I know of no better one than judicious advertising in such papers as will give each patron an honest showing, as one man's money is as good as another's. To the farmers and feeders I would never advise the purchase of high priced or fancy brood sows, but look well to the sire.

Messrs. I. N. Barker, Joshua Strange and Elmer Ross were appointed a committee on the President's address. Following this, W. H. Hughes, of Brownsburg, Indiana, read a paper on

"DOES RAISING ONE LITTER A YEAR TEND TO PRODUCE BARRENNESS?"

MR. PRESIDENT AND BROTHER BREEDERS: The question is, "Does One Litter a Year Tend to Produce Barrenness?" Well, I think it does, but if you raise one litter a year from a sow every year she is not going to become barren. If you only try to raise one litter a year she may become barren, but if you raise two litters a year your sow is not barren. My experience is in what few sows I have bred in my time. I have had about three, as well as I recollect, that became barren after raising one litter, as I did not want so many fall pigs. They were bred only for one litter, and came in heat regular every three weeks all summer until about the time I wanted to breed for a spring litter they quit coming in heat.

They were the kind that almost go crazy when in heat, and I could hardly keep them anywhere only in a tight pen. Now, I believe if I had bred them for a fall litter they never would have become barren, but as it was I had to feed them for pork. Now, of late years, when I have a valuable sow, I breed her for a fall litter as soon as she has weaned her first litter, and keep her raising two litters a year, and then I know she is not barren. The greatest trouble with me is to get them to have the first litter. I had one sow last year that I never could get to breed. I bred her to different boars—tried her every way that I knew how—but all failed, and I had to sell her for pork. My plan is, if you have a sow that is hard to breed, when she comes in heat keep her without feed or water until the second day, or just before she goes out of heat, then turn the boar to her; let him serve her, then turn him out, and feed her all she will eat of corn and slop. If that don't do the work, you had just as well feed her for pork and sell her to the butcher.

DISCUSSION.

S. S. Earhart. The paper is logical and his theory is good.

H. C. Oilar. The paper speaks of barrenness. If the sows are fed right they will not be barren, but some that are bred for show purposes are most always barren.

M. W. Clayton. I had a sow that would not come in pig; butchered her, but could not detect anything wrong.

L. W. Hamilton. I don't believe it is a good idea to breed two litters a year.

W. M. Randall. I have a sow that has caused me considerable trouble. I have bred her four times. She is in thin flesh. I keep her in a close pen and feed her bran. I expect her to come in again soon, and I will try again.

T. M. Reveal. I had the sow Darkness 2d on my place to be bred to Corwin Prince. She is a good breeder, a large sow, and was in good condition. She did not come in heat in thirty days, and as I was sick and could not tend to her, I shipped her back to Mr. D. Finch, the owner, and he treated her as I always do my sows, with good results: by taking a rubber tube with a bulb on the end, I insert this in the vagina and inject warm water, and have very satisfactory results from the treatment. They will discharge after treating and be ready for service. I understood Mr. Hughes to say in his paper that he fed liberally after breeding a sow. Now, I don't think they ought to be fed liberally after breeding.

L. W. Hamilton. After I breed a sow I put her in a dark place away from the other hogs, where they will be quiet till out of heat. I never had any trouble. After breeding I feed light with oats, rye and cooling foods. I never feed the morning before breeding.

T. M. Reveal. I keep the sows confined till they are out of heat, and I don't feed any more after breeding than before.

W. H. Hughes. I feed all they will eat after breeding.

Joe. Cunningham. I always watch my sows and breed them on the evening of the second day after they come in heat. I never confine them and always continue the same feed. I had a sow that I could not get in pig. I worked with her and finally got her in pig, but they did not amount to much. I don't think it pays for the trouble a man has with them. After breeding my sows I turn them back with the other sows.

Lloyd Mugg. I am satisfied that one litter a year will cause a sow to be barren, and I think a breeder will have better success by having two litters a year. I had a sow that raised me two litters last year and never came in heat again. She might have come in if I had worked with her. I have found that sows thin in flesh will come in heat much better than when in good flesh. If a breeder wants to get good strong litters he wants to have the sow in good flesh, and feed good before they have their pigs and afterwards reduce them. The worst trouble I have is with sows slinking their pigs.

L. W. Hamilton. Mr. Cunningham, don't your sows exhaust themselves when in heat if you turn them out in the lot?

Joe. Cunningham. I never noticed, as to that.

Secretary Pierce read the following communication from the International Association of Swine Exhibitors:

The International Association of Swine Exhibitors, organized to promote the interests of swine exhibitors, and including in its membership leading breeders and exhibitors of every recognized breed of swine from nearly every State in the Union, as well as from Canada, at its third annual meeting, held at the Secretary's office, St. Louis Fair Grounds, October 11, 1889, besides its routine work and the transaction of much other important business, unanimously adopted the following resolutions, and earnestly, through its committee and representatives appointed, beg the managers of all our leading fairs at least to give them a respectful consideration, hoping and believing you will see it to your interest as well as to ours to adopt them:

1. *Resolved*, That we ask all fair associations to adopt the following classification of swine for each breed, and to include in the classification all breeds publishing public records:

First and second on all the following: Boar two years and over, boar one year and under two, boar six months and under one year, boar under six months, sow two years and over, sow one year and under two, sow six months and under one year, boar any age, sow any age, boar and four sows over one year, boar and four sows under one year, sow and litter of five pigs under six months, five head of swine of any age the get of one boar.

2. *Resolved, also*, That we request all fair associations to employ single judges; to charge pen rent instead of entrance fees, and that when pens are paid for in advance they be held for the exhibitor paying for them. Also, that swine of the same breed be, so far as practicable, classed together.

3. *Resolved*, That the chair appoint a representative from each State, as well as two of a committee at large, himself being a third member of said committee, the duty of which committee shall be to have these resolutions printed and placed into the hands of each State representative, who is asked to see that a copy is placed also in the hands of at least each leading fair management within his State, and as far as possible appear in person before them, urging the adoption of these resolutions.

REASON WHY WE ASK THE ADOPTION OF THE ABOVE RESOLUTIONS.

We desire a uniform classification for the reason that a herd suited in numbers and ages prepared for one show can be shown at all. As it now is if an exhibitor fills the entries at one show he may have to carry with him on a circuit of a month or more animals that can not be shown any where else.

We ask that the boar be not required to show with his get. As a rule the most valuable sires have passed the age of which they should be fitted up and shown. Especially is this true of a very valuable sire. Leaving the boar out does not debar his owner from fitting and showing him for all other premiums nor does it debar him from a chance at this same prize, while on the other hand the best exhibits are often not shown because of their sire not being present. The breeding season immediately following the fair season the breeding boar that has been fitted and shown is not in proper condition for active use. Besides this even if he is shown in moderate flesh there is much risk of losing or injuring him while being shown.

AMOUNT OF PREMIUMS.

We wish to say, also, that if the amount of premiums given swine bore the relation to premiums given other kinds of stock that the pork product bears to the product of other kinds; or if the money be proportioned as the work and expense necessary to exhibit swine compares with that necessary for the exhibition of other kinds of stock; or, lastly, if the very great risks swine exhibitors are compelled to take of getting their herds diseased and destroyed while showing, is taken into account, we are sure we will be rewarded a greater share of the premiums than we are receiving.

We deem it unnecessary to explain why we prefer the one judge system as so much has been said on that subject.

We think it best to charge pen rent instead of entrance fees, because by this change we believe fair associations will be relieved of much annoyance caused by selfish exhibitors claiming more than their share of space. All then will economize space, and much cheap stuff brought for sale only, and which greatly reduces the average quality of swine on exhibition, will then disappear from our shows.

Justice demands that pens, when paid for in advance, be held as agreed. If any thing will make an exhibitor feel like staying away from any fair in the future, it is to land at that fair, himself and stock worn out, to find the pens he paid for filled with stock belonging to some one else.

DISCUSSION.

Lloyd Mugg. There is no premium on male and female under 6 months at St. Louis.

I. N. Barker. I would like to adopt all but one resolution. I object where it says in the classification: Sow and litter of pigs under six months; I think it ought to be sucking pigs.

Joe Cunningham. I take one exception to the list read. It ought to say boar and five of his get, you may have a hard looking boar and a fine litter of pigs.

B. I. Benson. It ought to read: Five pigs, all of one litter

Mr. Hamilton. We do not always like to feed up our boar to show, as they are too valuable.

Lloyd Mugg. There are some classes in the list that don't suit me exactly, but the worst trouble breeders have had to contend with in showing at the different fairs is that there is no uniformity in their lists, and in order to make all the shows at the different fairs, he has to carry more stock than he can afford to. What we want is a list that will answer at all the State Fairs. In Indiana you show a sow and sucking pigs, at St. Louis it is a sow and litter of pigs under six months old.

Joe Cunningham. I have given the boar business a good deal of thought. What would you think if you saw a herd of Shorthorns in the ring and no bull? Talk about making them too fat, why, you have them fat all the time, and I don't think the class is full without the boar.

Mr. Sanford. If I had as good show animals as Mr. Mugg I would not feed up for \$100.

L. W. Hamilton. You can feed a stallion up, also a bull, but if you feed up a boar it hurts.

I. N. Barker. I move we adopt the recommendations in the list submitted above.

Prof. Bell. I understand this is to bring about uniformity, and I think we should abide by it, if we don't, all States will amend it and defeat the object.

S. M. Shepard. I make a motion that we adopt the report as read, provided that Illinois and Missouri adopt it; if not, we have amendments to make. Approved and adopted.

The committee appointed to wait on Gov. A. P. Hovey reported that he was ready to meet the Association, after being introduced he made a few remarks, after which there was a recess of ten minutes to give the breeders a chance to get acquainted and shake hands with him.

The meeting being called to order, the next paper was by H. C. Oilar, of Russiaville, Ind., on

"HOW SHOULD WE CROSS OUR STOCK TO SECURE UNIFORMITY?"

Gentlemen of the Indiana Swine Breeders' Association:

Uniformity includes several distinct qualities; we might say the first and most easily noticed is color, in order to have the pigs of uniform color, there should not be used for breeding purposes any stock, not of standard color if a uniform color is desired.

I would say, in order to secure uniformity in our herds that no stock should be used for breeding except such as have been bred to standard color. It should also be of medium size, of regular form, of good nerve and good feeding qualities.

I would say, in order to secure uniformity in our herds, at least five things should be considered; color, size, nerve, action and feeding qualities. In making our crosses no individual should be used which has not been bred to standard color of medium size, good nerve, good action and good feeding qualities, all extremes should be carefully avoided.

Joshua Strange. I bred 125 head of hogs one season, which were entirely uniform. I sold them in the Buffalo market. Hogs can be bred this way by proper crossing of well-bred sires and dams.

President Bebout. If you get good sows of equal type, breed to males of same type, and you will have uniformity in your herd.

S. S. Earhart. We expect like to get like, and, in order to get uniformity in your herd, watch them and you will get good individuals, if like begets like.

B. L. Benson. I want the ancestors good and of same type, and I also want the males larger than the sows.

Joe Cunningham. I have bred sows and have had a nice uniform litter from them, the next season I have bred the same sow to the same male and the pigs were the reverse; you can not get a uniformity one time in a thousand in your herd by breeding all your sows to one male. I can't agree with Mr. Strange on his 125 uniform hog proposition.

B. L. Benson. Take a sow, and one season she will have a litter of killers; next year they will not be near so good.

Joshua Strange. By incestuous breeding we will get uniformity. The Poland-China hog of to-day is not like the old original Poland China. It is an improvement. As a rule, you will get uniformity if you breed properly.

I. N. Barker read a paper on

"IS IT ADVISABLE TO FEED PIGS FOR BREEDING PURPOSES MORE THAN TWO FEEDS A DAY?"

I answer emphatically no; especially do I say no if the pigs have a roomy lot or field with plenty of clover and grass. a thing that pigs should have as the development of bone and muscle is far more important in this kind of stock than the laying on of fat; in fact the mere laying on of fat should be carefully guarded against in young breeding stock, as a strong bone and vigorous constitution is all important in this class of stock. My own way of feeding pigs for breeding purposes is to feed only twice a day, and I want three-fourths of this feed to be wheat shorts and ship stuff mixed with kitchen slops and milk, and not feed them half what they would eat, thus compelling them to range over the lot or field to gratify their appetite on clover or grass, and thus secure that exercise so necessary to their healthy development, and to this treatment I add one or two ears of corn to each shoat. In winter when clover and grass can not be had, I aim to substitute potatoes, pumpkins, turnips and small apples. I have long been convinced that if this treatment was applied to all hogs and pigs there would be fewer pigs broken down in their feet and far less heard of swine plague and cholera.

S. M. Shepard. I don't quite agree with my friend Barker. My theory is to feed often. The sow up to the time she has care of her litter feeds often and little at a feed.

When a pig is weaned it is accustomed to a little feed and often; if you make a gradual change of the feed you revolutionize the entire system; follow nature and

feed often—three or four times a day. Feed as early in the morning as possible, then at 11 A. M. and before going to bed, and they will do better than with only two feeds a day.

Joe Cunningham. I don't concur in Mr. Barker's three-fourth feed theory. If you have the right kind of pigs you can feed ten times a day without hurting them if you like. Give pigs as much shorts as they will eat, and for pastry I give rag weed dust.

I. N. Barker. I want to reply to Colonel Shepard. He says that feeding twice a day is not often enough. Have the breeders not noticed that the pigs finally suck only twice a day when they begin to eat. I don't want pigs to stand around and eat all the time; let them run around. If you have it, put them in a good pasture where they will have exercise and get bone and muscle.

James Riley. If we raise pigs for breeding purposes, friend Barker is right; but if we raise them for market, we want all the flesh and fat they can carry. When a pig is small, his stomach is small, and they want feed often; when grown up their stomachs are larger, holds more, and they don't need feed so often.

S. M. Shepard. Breeders have often noticed that a sow will let her litter suck as often as they want until she is ready to wean them, when she deprives them of sucking, only allowing it at intervals. You have all noticed pigs will follow the sow around when they are hungry till she lies down and lets them suck; that shows that the pigs are fed often; nature requires them to nurse often; when a pig makes a demand from the sow, it gets it till just before weaning time. I am in favor of feeding often. I would feed new milk and a little corn; milk and corn is good enough for any pig; when fed lots of slop you get all belly, and then you have to feed them down. When you feed twice a day they do not masticate their food good, till they fill themselves full, which is not good for them. If you feed oftener they will take their time and properly masticate their food. The pig understands when it is meal time, and you want to feed regular and often. I feed raw feed; cooked food impairs to some extent the digestion of the animals.

James Riley. I would advocate bulky food. I recommend shorts, milk and ground barley. I don't believe there is any advantage in cooking food.

President Bebout. The United States Experimental Station officers, who have tested the matter, say there is no advantage in cooking feed.

Joe Cunningham. I have been in the show ring as long as friend Barker, and I have fed three times a day. I commence when ready to wean. They seem like they are always hungry. When anybody comes to look at my herd I feed them. In the summer I feed at sun up. As soon as they are through eating they go to a blue grass pasture, and they stay there till the sun gets too hot for them, then they hunt the shade. At noon they are feed once more, after which they make their tour in the blue grass again, and by evening they are ready for their supper. They get plenty of exercise, plenty to eat, and that is what makes these broad-back fellows.

H. C. Oilar. Mr. Cunningham recommends three feeds a day when they are weaned. I always feed my pigs as soon as they will eat shelled corn, even if before weaning time.

The following paper was next read by T. M. Reveal, of Clermont, Ind.:

WHICH IS THE BEST TO USE, AN AGED OR YOUNG MALE, IN THE BREEDING OF SWINE?

This subject or question I am unable to answer by a single word or sentence to this large body of practical professional breeders. In my attempt to point out a few illustrations of the past that have proved a success I am able to speak only of the breed that I am somewhat familiar with. I have made a specialty of the Poland-China for eighteen years. The names and numbers of animals I shall mention will be those from the Central Poland-China Record volumes. These I have and am familiar with only. I should like to be familiar with other breeds and records in order to be able to give a more extended and interesting paper. I thought in the beginning to enable us to determine which would be the best age of a male to use, would be to turn to the sires of the most noted and valuable animal that has been produced from the Poland-China breed in the past, such animals as have proved of great value as breeders, prize winners and selling for extra high prices. For the purpose of determining the age or ages of the sires of these special animals, in order to get the correct age of the sire at the time these animals were gotten I must refer to the recorded facts. The first that I shall mention is an animal of national reputation, she having won national prizes, was a grand individual as well as a good breeding dam. This was Black Bess 208, Vol. 1, C. P. C. R. She was sired by a pig, Black Joe, 77; her dam, Queen of the Black Bess Tribe, was sired by Dan when in age less than one year. Perfection 417 came to Indiana at a long price, was truly valuable in blood strains as an individual prize winner as well as a sire, was a son of Prizer 379, sired during his first fall work. This pig, sired by a yearling boar, Boyd Hog 319, but No. 319 is sired by a pig called the Cook Hog 301, his dam a gilt called Virgin 186, her sire Black Joe during his pignood, also from a pig called Isabelle 170. In this connection here please allow me to say that in almost every meeting it has been my pleasure to attend the question has been asked and discussed, Does the breeding together of young animals have a tendency to degenerate the breed? The above facts would show that it does not. I wish to mention a large number more of animals that many of you are familiar with as being popular sires or dams valuable in different ways. Star of the West 535 changed hands several times at a high price. He was sired by a pig less than nine months old, and in turn, before he was the same age, was mated to a gilt, Lady Duffield 586, the result of which produced the most popular sire ever known to the breeders of the great Poland-China hog all over the corn belt. You well know I refer to Tom Corwin 2d 575. He justly won many prizes, and his direct and indirect progeny appear oftener than any one animal in all the Poland-China records. He probably sired the highest priced Poland-China hog that ever came to Indiana, when one year old, Give or Take 1677. But the most noted son Give or Take has to his credit was gotten by him when a pig in the hog Lord Corwin 2d 1313, from the gilt Lady Corwin 1166. Then probably during his first year of breeding there never has been as many and as good lot of rare prize winners produced by one young sire in a season as was

thrown to the credit of Lord Corwin 2d during the spring of 1882; this before he was twelve months old. Commander 1385, a noted sire during his day, is by a pig from a gilt. I will next enumerate a few very popular and valuable sows and give the ages of their sires. Lady Pugh, Queen B. B. Tribe, Black Bess, Bess Stibbens, F.'s B. Bess, Lady Duffield, Ducky, Darkness 2d, Isabelle 2d, Garfield Beauty. Of all these different noted sows their sires at the time they were gotten were less than one year old.

There could be a short history of interest written on each of the above animals that would be of interest to many young breeders of Poland-China swine. Isabelle 2d 4112 was the dam of Found-at-Last 2021, a five hundred-dollar hog. This was a pig of her first litter, sired by Look-No-Further 2015 before he was ten months of age. Garfield Beauty was the dam of Commander. Darkness 2d has reared three or four litters that have brought in the aggregate from \$400 to \$600 each litter. Bess Stibbens 870, mated to the pig Young Perfection 485, produced IXL and Moorish Maid. The boar Beecher was sired by a pig. Beecher, before he was one year old, sired the noted and great breeding sire World Beater. Now, I believe there can not be a like number of equally as valuable and popular prize-winning animals shown that have been sired or produced from sires or dams over two years old, possibly not an equal number of equal value from those of the age of one year and over. In the above I have given only recorded facts, not the theory of others or myself. In the above thirty-three animals mentioned that were sired by pigs less than twelve months of age, you will certainly admit them to be tops, specimens of the breed of very extra high merit. The records show really good animals, sired by boars from eight to ten years old. But the large majority of those of the strictly highest order are credited to males less than twenty-four months old. The subject is, which is the best to use, young or old? From my observation in regard to the use of the male, a pig eight or ten months old should be used sparingly—not more than two or three services per week; should be well fed, have good quarters, carefully groomed and have plenty of exercise. The boar fifteen to thirty months old, with stronger muscles, stouter frame and closer knit bone, can be used from four to six times per week. Probably the greatest amount of services can be performed by the male hog at an age between fifteen and thirty months. In their old age, between six to ten years, their services should be very much lessened. The close observer will notice the facts that while the pig can not perform as many services as the two-year-old without injury, the impress or image is as strong or stronger than when he is older and fully developed. I am unable to say why this is so, unless the circulation is faster and there is more vital forces in the young, active, growing boar than in his senior. You breeders all know how rapid the young boar is, and what it takes to control the ranting, fretting young male pig; and is it not true that this class often does not look well, they prove to be good breeding boars. Finally, I conclude, from observation, the best age of the breeding boar is from ten to thirty months. In conclusion I wish to say, about one year ago this Committee on Programme bored me by giving me this subject; they, therefore, are to be held entirely responsible for me boring you at this meeting. But as it has been said the boar is one-half the herd, this is a

subject of such importance as I hope will bring out a full discussion; that much valuable light will be thrown on the subject; that we will gain some valuable hints.

DISCUSSION.

L. W. Hamilton. The paper just read is a good one, and shows us that the young male is the best.

Col. Shepard. I think the paper is not only good, but shows the writer has taken trouble to hunt up facts. In regard to boars, I will just say that the young boar has extra good care, and they are full of life and vigor, and in good condition to serve a sow, while the old boar is stuck off in a fence corner, and when the hired man happens to think of him he is fed and watered. When the breeding season comes around he is just the reverse of the young boar; he lacks life and vigor. No wonder. He has been stuck off in the fence corner and not properly taken care of. Take him out of his corner, give him exercise, feed him up, and when his blood begins to run through his veins he will give as good results as the young boar. It is not so much the age as the condition. Those Butler County breeders always used a young boar that was active and vigorous, and the result of it was that you now have a good strain of hogs. A pampered pig is a growthy pig. Take the old boars, treat and feed them like you do the young boars, and get them so they will jump around like a pig, and in my judgment they will give as good results.

H. C. Oilar. Don't we have to let him run down so as to get him in thin flesh?

Col. Shepard. I did not mean to get him up in show condition, but in good condition—not too fat. Let him run in a clover lot with a feed of oats. Don't let him run down while you are not using him.

Joe. Cunningham. I am in harmony with Brother Shepard. If Mr. Reveal is right, then I am wrong. Friend Reveal says you can let a boar serve a sow three times a week. I believe a good, vigorous young boar can do better than that without hurting him. Say a sow a day, for that matter.

T. M. Reveal. We sometimes begin to use our boars before they are ten months old. A breeder can use his boar twenty times a week if he wants to, but he will not be the producer that he will be if only used eight times a week.

I. N. Barker. I like Mr. Reveal's paper, but we don't want to let the impression go out to the world that we believe a young boar is the best to use in the herd. If you find a valuable boar, keep him till he is five or six years old.

T. M. Reveal. I would like for Mr. Barker to give some reasons for his assertions; he goes too much on theory. We have had enough of theory heretofore at these meetings. What we want is something practical. If Mr. Barker can tell me why a pig ten months old is not the best animal, why let it go out to the world. I will stick to my paper unless you can prove to me that an old boar is the best.

I. N. Barker. Mr. Reveal objects to theory. I have used males till they were six years old. I have had better satisfaction from older animals, and believe they are better. I would like to ask if these boars Mr. Reveal speaks of in his paper as producing good pigs when young were not as good breeders when older? We don't want to encourage breeding to unmatured animals.

T. M. Reveal. I looked that up, and found that the boars produced their best pigs when young.

Col. Shepard. I can't follow Mr. Reveal all the way through, but he has more old boars on his place than I ever saw on one place before. He should practice what he preaches. He has an asylum for old boars. The best son that Tom Corwin 2d ever produced, he got at six years of age. I will expect to see young, vigorous boars on Mr. Reveal's place the next time I visit him.

T. M. Reveal. My friend Barker has got the country full of men who want to breed to boars ten or twelve years old, and we all keep them to supply the demand. I do say that the greatest number of the best hogs raised as prize winners and breeders are from boars under twelve months old.

Lloyd Mugg. Brother Reveal in his paper has proved by the different records that the young boar is the best. I believe that a young boar will get as good and as strong pigs as the old boars. A successful breeder always has a young boar on the place. We keep old boars because we know what they are and what they will produce.

Joe. Cunningham. I sold all my old boars and now have all young ones. I know I will get better results from them than from the old ones. I know from experience that pigs sired by my young boars "get there" nine times out of ten. I have given up this idea of keeping old boars. I will venture to make the assertion that nine-tenths of the show hogs were from young boars and I have been breeding Poland-Chinas 20 years this spring.

Mr. I. N. Barker from the Committee on President's Address reported as follows:

We, your Committee on President's Address, beg leave to submit the following: We have had the same under consideration and highly commend it to the consideration of the swine breeders of Indiana as a worthy and highly commendable paper.

Adjourned to 7:30 P. M.

EVENING SESSION.

The Association met pursuant to adjournment. Secretary Pierce offered the following:

WHEREAS, The appropriation of \$5,000 by our State Legislature to be annually expended in conducting Farmers' Institutes under the management of Prof. Latta of Purdue University has been of vast benefit to the farmers and producers of live stock in Indiana; and

WHEREAS, It is inadequate to the successful and complete operations of such institutes in the State; therefore

Resolved, That we recommend that an additional appropriation, amounting in the aggregate to \$10,000 annually be made by the next Legislature for the purpose of conducting such institutes in the State.

Joe. Cunningham. I think the resolution is a good one and should be adopted. The bill originated with our representative, Mr. Robbins, of Miami County. \$5,000 allows only \$40 to each county, the amount is not sufficient to pay expenses. It is a duty enjoined upon each of us to see that these institutes are successfully conducted.

The resolution received the unanimous endorsement of all present, and was adopted.

WHAT IS THE BEST CARE FOR SOW AND LITTER?

R. Thompson. This is a very important question, one that I am not capable of handling. 1st—You must have good, comfortable quarters. 2d—No feed should be given the sow for thirty-six or forty-eight hours after farrowing. 3d—Good nutritious food should be given afterward as the demands of sow and litter calls for it.

S. S. Earhart. My idea is that after the sow is through farrowing, she should be given a little soft feed or cold water. If let go too long they are inclined to gorge themselves when fed, and if not fed they want something and oftentimes attack their pigs.

J. W. Wilson. There is as much in good care prior to farrowing as there is just before or after. Watch carefully until day of farrowing; just before the sow is ready to farrow, feed good meal of light food and she will not get very hungry. Then place more light feed where she can get it when she gets hungry. Feed her slops. This is my plan, and it has always been successful with me.

L. W. Hamilton. Would the breeders here recommend feeding just before farrowing?

J. W. Wilson. As I said before, I have been successful with this practice. I place the feed where she will get it, and never disturb her when farrowing.

T. W. Reveal. Two or three days before the sow is due to farrow I quit giving her corn and feed her slops or other cooling, relaxing food. Near the time, I have her bowels in a good healthy condition. At time of making her bed, I closely observe her. If she is inclined to be feverish at time of making bed, especially when she has no grass, give a dose of lard, cracklings or grease. Have had good success with this practice. Have always observed that feverish sows have trouble with their pigs. I give her a drink of tepid water in one, two or three hours, and feed in twenty-four to thirty-six hours after farrowing. In nature, sows usually make their beds near water, which they go to frequently, but do not eat anything for some time.

L. W. Hamilton. Would differ with Mr. Wilson, a full feed to a fine sow just before farrowing lost me \$75. She commenced trying to farrow, labored a long time, got feverish and died. I thought it was because her stomach was too full and prevented successful labor.

WHAT IS THE BEST TIME FOR SELECTING AND MANNER OF PREPARING ANIMALS FOR THE SHOW RING?

John Harcourt. I have had no experience in the show ring. You had better select some one to introduce this subject that knows something about it.

M. W. Clayton. Have prepared no speech, and have not shown for some years. The way our fairs are conducted we have no show. As to selecting, I select the

best individuals and feed to what I consider the best advantage. We all have different methods of feeding.

Joe. Cunningham. I am like Mr. Muggs was at our Poland-China meeting. I don't feel like giving my method away. It is an important thing to make the correct selection; not all can do this. I never think they get too fat. If you want them fat you must feed; can't get them fat on wind. Some think it takes a long time to fatten a hog, others a short time. I think it depends a great deal on the hog. I think two months is long enough. I keep stock in good condition at all times, then push them along rapidly a few weeks before fair season opens.

WHAT IS THE PROPER SIZE, TEXTURE AND SHAPE OF THE BONE OF THE THOROUGHbred?

John Wilson. This subject was allotted to me, but I have prepared no paper. With regards to it, I have observed that the horse men, with the horse, do not expect much of the animal having a large, coarse bone. It is the same with the hog. The tapering limb, fine bone, well muscled is what we are trying to produce. Take Seldom Seen. I never saw an animal of his age and weight carry as much flesh as this one and as well, and he had a fine, neat bone. There are others of our noted hogs. Trenton Rock has such a bone, and carries his weight well. As to the manner of obtaining it, that can be done only by selection. I have seen two breeders producing pigs which were produced from nearly similar families, and in one herd would be found coarse bones while the other had neat bones. This was because the fancy of these two men led to their selecting opposite types when making their crosses.

IS IT ADVISABLE TO CROWD PIGS FOR BREEDING PURPOSES FROM FARROWING TIME?

Geo. Scott. I am not prepared to discuss this question, but would like to hear it discussed.

Joe. Cunningham. Don't think it good policy to excuse all these breeders. If a breeder is placed on the programme he should make it his business to prepare himself. I have a motion to make, that we fine every one not responding next year \$15 and costs. I think they would come up then, and every one of them have a long paper.

H. C. Oiler. I hear some complaining about the stuffed pigs. I have noticed in my short experience that buyers always take this stuffed pig in preference to his thin companions. Therefore I always give my pigs all they will eat from farrowing time, with plenty of exercise, and have a pig ready for the buyer at all times.

T. B. Evans, Illinois. When pigs come keep them in good condition, and endeavor to hold them in that shape until sold. I have not shown at a fair since 1886. Can't say that I agree with some of you in reference to fattening hogs for

fairs. Of course the fat pig is always selected by the buyer and judges. I should say not to stuff pigs for breeding purposes; feed on bran, middlings and ground oats. After farrowing I keep the pigs as fat as I can get them.

M. W. Clayton. Does it injure a hog to overfeed it?

Joe. Cunningham. Have had no trouble with breeding lots. I don't think it injures hogs to stuff them. I am not so much opposed to fat. The corn question has been discussed yet there is a good deal of theory in this not feeding corn. I don't feed bran. It's too handy to get your basket and feed corn. We raise too much corn. I have traded corn for shorts. My pigs eat shelled corn; get the heat out of it by soaking. In the winter time, we feed hard corn; in summer, soaked shelled corn. I believe it's all right when soaked; don't believe in cooked feed.

J. N. Miller. Have been here two days listening to sheep men, cattle men and hog men. Have discovered that timothy hay is used but little, yet I know it to have more nutriment in it than any other feed; it occurs to me they are all after clover hay. Another thing, though so much corn is raised in Indiana but little is fed, all shorts, bran, buttermilk, clover and oats. What do you do with the corn? I believe corn is the handiest and best feed we have, and I also believe that you feed it a little more than you are willing to admit. I believe you can crowd your pigs too much for breeding purposes. I saw at our State Fair but one herd that had good feed, and didn't want any of them. Corn, grass and hay are good things and I use them liberally in my feeding.

H. C. Oilar. I think the gentleman is mistaken about his corn observation. The reason we don't say we feed corn in our discussions is simply it is such a common and simple thing to do, and all understand it to be such a necessary article, that even the city farmer needs no instruction on that question, but it is the supplementary feeds that we feel need of discussing. As to corn, I feed it all the time and so do all of us, and have for years, yes, ever since we raised hogs.

James Riley. We should stick to the text and discuss these foods; relative to the subject in hand, I say corn is not as good as crowding feed for our pigs from farrowing time. I feed shorts, ground barley and other tasty feed to my pigs in connection with corn. Feed has been one of our principal means of bringing our thoroughbred to the high position he now occupies, and should be thoroughly discussed. I perhaps feed more corn than I should, because it is so easily given, yet I feed large quantities of other foods.

H. C. Oilar. Three years ago, as an experiment, I fed a litter of pigs, attempting to secure a growth of a pound a day for one hundred days. They averaged ninety-seven pounds each at the close of the experiment. I sold them for breeders and to breeders with the best results. Fed nothing but milk and corn.

Col. Shepard. I believe corn is the best feed in every respect for the hog, and practice what I preach. I would like to take you all out to my place and show you pigs that have had, and are now getting, nothing but corn and milk. They don't know what bran, shorts or barley is, and I believe I could open the eyes of some here this evening.

Joe. Cunningham. I would like to have Mr. Oilar continue an experiment of the same kind as mentioned till he secures the second hundred pounds, then report. I think he would learn something about corn he does not know at present.

On motion, the following committee on programme was appointed for 1891: J. H. Bebout, J. W. Pierce, W. H. Morris.

On motion, the Secretary was allowed \$25 for his services.

On motion, the election of officers was proceeded with and resulted as follows: Lloyd Mugg, Center P. O., Ind., President; I. N. Barker, Thorntown, Ind., Vice-President; J. W. Pierce, Peru, Ind., Secretary; M. L. Hessong, Indianapolis, Ind., Treasurer; and J. Cunningham, Bunker Hill, Ind., J. Riley, Thorntown, Ind., R. Thompson, Indianapolis, Ind., Executive Committee.

On motion, the session adjourned to meet at 9 A. M.

SECOND DAY.

The Swine Breeders met pursuant to adjournment, at 9 o'clock A. M. The new President, Lloyd Mugg, was conducted to the chair, and after thanking the Association for the recognition, business was proceeded with.

Mr. A. J. Ross on the programme for a paper, being absent, his production was read by W. H. Morris:

"HOW CAN WE TELL THE AGE OF PIGS EXHIBITED AT FAIRS SO AS TO KNOW THAT BREEDERS DO NOT MISREPRESENT AGES OF PIGS SHOWN?"

Mr. President and Brother Breeders:

I was assigned the subject, "How can we tell the age of pigs exhibited at fairs so as to know that breeders do not misrepresent ages of pigs shown?" I will say, I do not know. I have seen pigs that were claimed to be under six months, that looked to me that they might be older, yet I could not dispute the word of the breeder as he has the best right to know the ages of his pigs. I don't believe there is anything to go by more than the general appearance, and that is very unreliable and variable. It is claimed by some that you can tell by the teeth. It may be a fact, yet even if that means was as reliable as it is with the horse, I would hesitate before accusing a man of dishonesty on any such evidence. Others say, that the shield is a means by which the age can be ascertained. I believe this to be as unreliable as any of the other ways suggested. Pigs at twelve months old, sometimes show less evidence of shield than others said to be seven, eight, nine or ten months of age. The formation of the tusks are equally as unreliable. So, unless I know through observation when a litter was farrowed, I would hesitate to question the word of the breeder regarding the same.

Mr. I. N. Barker. I confess I could not tell whether a pig is past six months or not. I was once accused of showing a pig out of his age, but did not do so intentionally. If I know a pig is over six months, I will not show him in a class under six months.

C. M. Clayton. You can tell when a pig is over one year old, but not under that age.

Joe. Cunningham. Until men positively know these things—ages, etc., we can do nothing, but if we have positive evidence that an exhibitor is showing in the wrong class he should be exposed by all means.

John Wilson. Will one day make a pig ineligible?

I. N. Barker. I think so. I have made two entries at fairs where pigs only came in by one day. So if the show was carried over a day I would be ready and in my proper class.

Secretary Pierce read the following from the Constitution of the Association bearing on the subject:

ART. 10. Any member of this Association practicing any deception or fraud in his dealings with his fellow breeders, knowingly exposing other breeders to disease by exhibiting diseased stock or otherwise, knowingly misrepresenting the age of stock exhibited, on proof of same shall be expelled from this Association.

On motion the following was passed:

“All stock eligible on day entries close is eligible to show in the class entered.”

Messrs. S. M. Shepard, I. N. Barker, R. Thompson were appointed a committee to consult and advise with the State Librarian as to what books he should introduce into the library for swine breeders.

The committee on programme reported the following:

PROGRAMME FOR MEETING OF 1891.

- Why I favor Swine Husbandry Prof. W. A. Bell, Indianapolis, Ind.
- Should a single judge or expert be allowed to pass on sweepstakes without the unanimous consent of the exhibitors? . . . Henry C. Oiler, Russiaville, Ind.
- The best manner of preparing pigs for, and manner of shipping Joe Cunningham, Bunkerhill, Ind.
- The best treatment of Chester White Hogs to retain fine coats and skin E. Thatcher, Hillisburg, Ind.
- What is good treatment of hogs? John Harcourt, New Augusta, Ind.
- Is it necessary to feed Tonics or Powders as appetizers to retain Health and secure the best results in feeding hogs? James Riley, Thorntown, Ind.
- The result of feeding for the Show Ring R. W. Sandford, Lebanon, Ind.
- What is the most profitable month to have Sows Farrow? T. M. Mints, Mohawk, Ind.
- What is the profits to breeders and feeders in attending these meetings? Walter Johnson, Burlington, Ind.
- The most profitable manner of feeding hogs for the market . . Gen. A. D. Streight.
- At what age can you derive the greatest profits from hogs fed for market? Wm. Pace, Bicknell, Ind.
- How can ensilage be preserved at the least expense to the breeder? J. W. Pierce, Peru, Ind.

On motion of Col. Shepard, and at the suggestion of the newly elected president, a resolution prevailed that officers of the association be not eligible for election two consecutive terms. After a short experience meeting the association adjourned *sine die*.

WOOL GROWERS.

The Indiana Wool Growers' Association met in fifteenth annual session on January 21, 1890, at 1:30 P. M., in the lecture room of the State Board, State House, with President I. N. Cotton in the chair. The roll was called, and the minutes of the previous meeting were read and approved.

Vice-President Cowgill took the chair and President Cotton delivered his address.

PRESIDENT'S ADDRESS.

Gentlemen of the Indiana Wool Growers' Association:

We have met to-day in our fifteenth annual meeting as wool growers, and not only as wool growers but as mutton producers. And we shall endeavor to take a retrospective view of our condition and progress. And in doing this we will not do it in a narrow and selfish way, but with that spirit which looks to the bettering of the larger number of this nation, knowing that when the larger number is benefited the individual is likewise benefited. There never was a time in this country as now when the agriculturist is looking in every direction to discover the product of the farm that will give him the best returns for his labor, and many eyes are turned to the sheep. And while we have lost in number we have gained in value, not in the increase of price of wool per pound, but in quantity; for we have in the last twenty-five years doubled the clip in pounds and improved it in quality, and who would dare say to-day that we as a nation can not produce wool of every desired quality, from the covering of our floors to the finest broadcloth and worsted worn by either man or woman. Some are in favor of flooding this country with foreign wool. What would be the result? Some one says, cheaper clothing. And what does cheaper clothing mean? It means cheaper labor for the wool grower, cheaper labor for the spinner, cheaper labor for the weaver, and cheaper labor for the tailor. And what does all this mean? It means less food for those laborers; or it means a less price for that food, and who does that less price strike? I answer, the farmer, the producer of the bread, beef, pork and mutton that the laborer consumes.

Let us increase the number of our sheep from 43,000,000 to 100,000,000, shearing 600,000,000 pounds of wool, doubling the number of sheep, doubling the number of farmers raising sheep, doubling the number of factories, and factory hands, and tailors, diverting their labors from some other over-production, while we feed

WOOL GROWERS.

these men and their families on our corn, our wheat, our beef, our mutton, the sheep consuming tons of hay, acres of pasture, and thousands of corn and oats. Why shall we not divert millions of capital and of laborers from other industries of which there is over-production, and allow other nations to crowd their productions on us. This increase in wool would enable the producer, the mechanic and the laborer to consume the more food and clothing, to build better houses and barns, to build schools, colleges and churches. It would give employment to a million men and women, and rich and poor alike would rejoice in the prosperity of the flock-masters and the enemies of our national industries alone would howl.

Of all stock-raisers, we, the wool growers, have the least cause to complain of depression so far as the sheep relates to human food. The sheep is bringing the best price of any of the domestic animals that go to the butcher. The principal reason for this improvement is found in the confidence in the wool trade by certain rulings given by the Secretary of the Treasury in the reclassification of wool and wool producers, and the increased duty which wool has to pay in consequence of said ruling.

The present demand for mutton shows that we are becoming a nation of people, and the wool grower may become a mutton grower. We are now consuming over one sheep to the adult inhabitant. The history of progress in this country clearly develops the fact that whatever seems to be the convenience and health of the people is what they will have, and as there is a demand for any product of the land, American enterprise has always been ready to supply it.

Mr. J. R. Dodge says that sheep, above all domestic animals, show an increase in numbers from 1884 to 1889, but are increased in value. This undoes the complaint that we are drifting to the mutton sheep. For the increase in value is contributed to either increase in number or increase in value of wool. Rusk, in his recent report, says: "I respectfully call your attention to the fact of significance, in this connection. There have been serious interruptions to the prosperity of wool growers since the reduction of the tariff of 1883; the number of sheep have apparently been reduced 7,000,000, and the importation of wool has increased from 78,350,651 pounds in 1884, to 126,487,730 the past year. The sheep and wool industry of this country the burden of this loss has been thrown upon the wool grower."

Organization is the order of the day. Then, let us not only have a Wool Growers' organization, but find means to more closely unite all the agricultural organizations, not only of this State, but of the whole country. It is a solid effort, not only to protect ourselves, but to act for ourselves. We are in a majority, should not be asking for this or that legislation, but should be acting for ourselves. Let us look about and see how it is, regardless of party. In every office to be filled the farmer may get one in a hundred, and in the last few years, in the legislatures, one democratic and one republican, how many practical farmers have received appointments of profit and trust, even where they are directly interested. No, they come from the ward politicians or some other organization. It is time that the farmers organize and take this government in their

And I rejoice that the signs of the times indicate a movement in that direction. You and I may not live to see the farmer and mechanic controlling this government, but let us start this movement that our sons and daughters may rejoice in the blessing. We have the intelligence and power, let us use them.

Man, individually or collectively, never gains any material results by inactivity. I would therefore recommend a vigilance on all subjects of legislation whereby our interests may be protected and advanced.

And as long as this government collects its revenue by tariff, or any portion of it, the wool grower should not relax his efforts to secure his full proportion of that tariff. Why shall our representatives in Congress strike especially at the wool grower and proclaim him on the free list? The farmer is to-day bearing the heat and burden of this government. And as long as the ballot remains in our hands if we are trampled down it will be our own fault. Let us demand of the custom-house officers a rigid enforcement of our laws in the collection of revenue on wool.

We have reached a period in the agriculture of the country when success in farming means the maximum or greatest yield of products; the minimum or smallest yield means indebtedness, hard times, self-denial and poverty.

The farmer's life is full of responsibility. It is required of him to be a man—a man physically, mentally, socially and morally. And to this end he is under bonds to himself, his family, his neighbors and his God. And in proportion as he fails to use every means within his reach to develop the highest type of manhood possible, just in that proportion he becomes a debtor to man and God. Men like other animals, are "scrubs" unless they are improved. Long ago the question was raised, "Am I my brother's keeper?" And it was answered emphatically in the affirmative. We not only wield an influence upon others, but we are influenced by others. Who can mingle with the low and vulgar without feeling that his manhood is worsted, or who can mingle with the moral and intelligent without being a better man?

The address was referred to a special committee, consisting of Messrs. Robe, Thompson and Hend.

The paper of Isaac Williams, of Muncie, was read by Secretary Robe, the former being unavoidably absent:

"IS IT BEST TO BREED FOR MUTTON AND LET THE WOOL TAKE CARE OF ITSELF?"

The question whether sheep can profitably be bred for the mutton alone has been one upon which considerable thought has been given, and yet we find a diversity of opinion among men whom it would seem are fairly able to judge. To the question I will venture the answer, "No," and try to give reasons afterward. Now if we raise sheep just for the mutton, why not abandon them and raise cattle?

In my experience I have arrived at the conclusion that in the raising of sheep the wool will pay for the keeping, and we have that much more profit; and when we breed for the mutton alone we materially decrease the wool product and proportionately decrease the profits arising therefrom, and, therefore, we must not breed for one thing alone.

If the enormous herds of this country were bred for mutton alone, it would be but a short time until the entire wool trade would be turned over to our Australian friends, who would supply the demand, which would have a tendency to increase the price of wool, which in turn would of necessity increase the price of common wearing apparel, or turn the whole wool business over to our Merino friends to supply us with fine wool, and we all can not afford to wear such fine clothing.

The Merino breeders don't raise very much mutton, as their sheep is nearly all wool, and after the fleece is clipped there is nothing left but a very small carcass. In order to gain a requisite amount of profit we must raise a sheep that will combine a growth of wool with a growth of mutton—one that will make the most pounds of mutton and a good grade of wool. Most pounds with the least feed—that is where we get our profit. When we drop the wool interest we are losing that which we should have, for if the wool pays for the keeping then all we make on the lambs pays us a good interest on our money. For illustration, we will suppose that we will take \$100 in the fall and start out and buy twenty good common ewes for \$75, and pay the \$25 remaining for a good ram. We then breed them and take fairly good care of them through the winter. When spring comes look after them closely and we should have twenty lambs, which, at the end of the year from where we started, we can sell to the butcher at \$3.75 or \$4 per head. We will accept the lower price and will be safe in saying that we can sell the twenty lambs for \$75, which brings us a return of 75 per cent. on the money originally invested and the flock is left.

Now we will fall back on the wool, and with anything like good care the wool will bring \$30, which pays all expenses for the keeping of the sheep. Now it is easily to be seen that if the sheep had been raised alone for the mutton we would have to deduct the \$30 from the sale of lambs, which would leave us \$45, or only 45 per cent. on our money. From this deduction it is plain to be seen that we must keep the mutton and the wool together to make the raising of sheep profitable.

This is the reason that sheep breeders can raise sheep and sell the mutton at the same price as that of cattle and make more money, for the wool pays for the feed, and the wool from the cattle don't sell very well.

There is another thing in favor of the sheep, they don't tramp the ground so much as the heavy cattle, and the manure is far superior to that of any other stock.

Now, on the other hand, we must not breed too much for wool, for when we do we weaken the constitution, for we always notice that sheep, of any breed, which are the best covered on head and legs, and finest wool, are the weakest in constitution. Therefore we must guard against that part and try to raise sheep with a good constitution, with plenty of mutton, and all the wool we can get—the more the better.

DISCUSSION.

C. A. Howland. You have called on me and I am on the programme to lead the discussion on the next paper. However, I will say that my impressions are you could not raise sheep profitably alone for mutton. The proper way is to raise sheep for wool and mutton combined. At present the price of mutton is higher than for several years. Wool is also higher. But this condition is brought about by a scarcity of sheep. There is a steady demand for all the mutton thrown on the market at times. Five years from now sheep may be a drug on the market, probably not worth fifty cents a dozen. It is within my memory when a flock of sheep, sent to the Stock Yards, did not pay to drive them there. Sheep are the most desirable when there is a scarcity; when plenty they will not sell along side of beef.

You can't engage in the sheep business for mutton alone. Why wool is cheaper now than when I was a boy, I can't understand, unless it is because we had less protection than now. We can raise mutton and wool as cheaply as any other country, both coarse and fine wool. Our soil is certainly as fertile, and as well adapted to sheep raising as any country on the face of the globe. I would like to know why it is that foreign countries can send cheap coarse wool here by the 100,000 pounds? There is a screw loose some where. If this Association can find that out, it will have accomplished a grand service.

Mr. Beeler. I don't know that I have anything new to offer. It is certainly not advisable to raise sheep for mutton alone. The wool will about pay for taking care of the sheep. I think my friend Howland is wrong about foreign countries. They can raise wool cheaper than we can. Take, for instance, the vast plains of Buenos Ayers; wool can be produced by the 1,000,000 pounds that require no feeding. Also, in Australia, on the plains, there low priced sheep by the thousands, growing fleeces of the finest quality, are raised, and they can undersell us with sheep on our high priced land.

Mr. Howland. Don't we receive wool from Europe?

Mr. Beeler. Not as I understand it, we do not.

Mr. Thompson. There is quite a large amount shipped from England, about 400,000 pounds from Australia; it sold for 9 $\frac{3}{4}$ cents per pound. At Bradford, England, the price of English wool is about thirteen cents. Shropshire wool is brought here and sold.

P. A. Phipps. If land is more valuable in England than in this country, how can they raise wool at thirteen cents and make money at it?

Mr. Thompson. I have an answer for that in my paper.

Joshua Strange. I would like to ask Mr. Howland, how can cattle be raised cheaper than sheep?

Mr. Howland. For meat alone they can, but not when you include the wool.

On motion of T. C. Phillips, the mover with Chas. A. Howland and Joshua Strange were appointed to wait on the Governor and inform him that the convention was ready at any time to hear his address.

Hon. C. Cowgill of Wabash delivered his address on

"HOW SHALL SHEEP HUSBANDRY BE MANAGED SO AS TO SUPPLY OUR HOME CONSUMPTION IN WOOL."

Mr. President:

The subject assigned to me for an essay is, "How Shall Sheep Husbandry be Managed so as to Supply Our Home Consumption in Wool."

The subject is interrogative in its character and implies that the question may be so answered that by following the suggestion of the answer a sufficient supply of wool may be had to meet the home consumption. To a people like those of the United States, occupying as they do, so vast an extent of country, embracing almost every climatic feature, as well as every character of soil and production that can conduce to the comfort and happiness of civilized man, with a population so great and so rapidly increasing and extending itself over every part of our vast territory. There is perhaps no one article of more prime necessity than wool. The fact that its use is necessary to the health and comfort of man renders the question of how to secure an ample supply for home consumption one of greatly more than ordinary importance. And yet conceded as is the fact that the general use and consumption of wool amongst all classes, the poor as well as the rich, is absolutely indispensable, it is a fact abundantly established by statistical information that with one or two exceptions there has been no year during the 100 years of our existence as an independent nation, that we have not imported more than half as much wool and the manufactures of wool as we have produced. Much of that time the importations were in excess of our production.

If you take the period of twenty years from 1867 to 1887, a period in which more accurate statistical information is attainable than in any other, it will be found that in five of the years embraced in those two decades, we actually imported more of wool and the manufactures of wool than our entire domestic production. And if the importations are compared with the home production for the entire period of twenty years, the domestic production will be found to exceed the importation only about 60,000,000 pounds. But when we take into consideration the immense quantity of wool and woollen goods that are imported that no account is taken of, owing to the means adopted to defraud the government of its revenue, will be conceded by all candid and well informed persons on the subject that the importations of wool, and the manufactures of wool, have very greatly exceeded the domestic production, taking one year with another, during the whole of our National existence. The Hon. Wm. Lawrence, of Ohio, a high authority on the subject, in a late speech delivered before the "National Farmers' Congress," at Montgomery, Ala., estimates the entire consumption for the United States at 619,000,000 pounds annually, and our home production at 240,000,000, leaving a deficit to be supplied from abroad of 379,000,000 pounds. But if you estimate the home production at 308,000,000 pounds, the largest amount ever produced in any one year, we require 71,000,000 pounds more than double the home production to supply the home demand, according to his showing. I shall not occupy your time by explaining to you the means that are resorted to by the importer under the names of *Mango-Shoddy*, the different articles that are denominated waste, etc., to cheat the gov-

ernment out of the revenue to which it is entitled, and what is infinitely more injurious in its effects, destroying the farmer's home market by a ruinous competition that he should be protected against. But I shall content myself by quoting from a very full and valuable special report made by the Chief of the Bureau of Statistics for the Treasury Department in 1887, on the subject of wool and the manufactures of wool. And as I shall have frequent occasion to refer to that report in this paper, I shall do so by denominating it Special Report Treasury Department.

The Chief of the Bureau says, on page 22 of his report: "Ring waste is so called only by exporters of the article to the United States. A number of the mills of the United States purchase it of importers who have given it the name of ring waste for the purpose of avoiding the proper duties. It is in point of fact a very highly purified article of scoured wool, being made from wool top which is the cream of the wool, by reason of having had the short and broken fibers or bottom, combed from it, by combing machinery."

This being our history and our condition as a Nation, we may well ask how can that husbandry in importance inferior to none, be so managed as to supply our home consumption in wool?

In every portion of our country from the sterile hills and rock-bound coasts of New England to the piney forests and sunny plains bordering on the Gulf of Mexico, and from the shores of the Atlantic to the waters of the Pacific, it has been found, by actual experiment, that no domestic animal is better adapted to meet the exigencies of its surroundings, and yield a fuller return to the husbandman for his care than the sheep.

The question assumes that sheep husbandry may be so managed as to supply the requisite amount of wool, if the discovery shall be made that shall secure management.

The improvements made, both in quality and quantity, in domestic wools, in the last twenty years, warrant the belief that a condition of things may be made to exist that will enable us to supply the demand.

Experience teaches the lesson that as our people improve their condition and increase their ability to meet their necessities, the necessities themselves are multiplied.

So that as poverty desires the comfort of life, thrift and prosperity demands and supplies, not only the ordinary comforts, but many of the luxuries. And I am not unmindful of the fact that with the enormous increase of wealth in this country since 1860, that the demand for the manufacture of wool, in the ten thousand ways in which they are made useful to man, has kept even pace, if not in advance, of our rapid accumulation of wealth.

Now, am I forgetful of the characteristic trait in Americans, to have what they want, when conscious of their ability to pay for the same. Notwithstanding all this, we are blessed with a country equal to the production. We have, without including Alaska, more than three and one-half millions of square miles of territory, stretching within a little more than twenty degrees from the equator to the forty-ninth parallel of latitude in the north, within which more fertile plains, richer valleys, verdant hills, or grander mountains, are no where found; with a

population supposed to number 65,000,000, that for intelligence, energy and thrift are surpassed by no people now living, or that ever did live, in any age of the world.

And yet, with every means necessary to the production thereof, more than half of one of the prime necessities of life now is, and always has been, the product of foreign countries. Why is this so, and what is the remedy, if there be one? It will not do to say that the various qualities and characters of wool can not be produced in sufficient quantity to meet the demands because of unfavorable climatic influences, or lack of proper ingredients in the soils, and the food they produce. These theories were exploded long ago. It was long urged, and to some extent still is, that carpet wools, so-called, can not be grown in this country in sufficient quantities to supply the demand. It is now believed that this objection is only urged by interested parties in order to keep down the duty, for the benefit of a class, at the expense of the domestic grower, by bringing him into competition with wool growers in countries of cheap lands and low-priced labor. Such objections come with an ill grace from American manufacturers, who spare no pains to maintain the duty on the manufactured article, that they may hold the home markets for their own fabrics.

In support of the assertion that I now make, that every class of wool necessary to home consumption can be produced in this country, I cite Mr. James Linch, a high authority on wool statistics, who says, in his letter, under date of September 26, 1887, to the Chief of the Bureau of Statistics, in speaking of wools of the United States:

"All wool can be used for clothing purposes, barring a trifling quantity of hairy and kempy, which comes chiefly from Colorado, New Mexico and Texas. It may be said that the coarse wool from any section may be used for carpets. No one has ever embarked in the business of growing carpet wool by itself, nor is there any likelihood of its ever being done."

I assert, and believe the assertion will not be controverted by any reliable authority on the subject, that this country is capable of producing all the varieties of wool necessary for every character of manufacture to supply home consumption in the greatest abundance. I further assert, and the statistics of the country establish the truth of the assertion, that the reason why the home production has not supplied the home consumption is, that we have permitted the cupidity and greed of the importer, coupled, to some extent, with the selfishness of the home manufacturer, to flood the country with wool grown on cheap lands of foreign countries, and prepared for export by the labor of the indolent, half-civilized natives of the countries whence it comes. And when it has come to us in the manufactured state it came from countries where capital is cheaper and more abundant, with labor depressed, so that the hand that wrought the fabric was but scantily paid. Hence the competition produced in our own country, and in what should be exclusively our own markets, compels the intelligent, well-fed and well-clad American citizen to degrade himself to the level of the pauper-paid labor of Europe, or to lead the half-civilized life found in India or the English colonies of South Africa in order to compete with them, or abandon the American wool

market to foreigners. In a word, to successfully compete with his foreign competitor he must have land at the same price and labor at the same cost. If the protecting arm of the government, of which he is a component part, and for which he is bound to make any sacrifice, even to life itself if need be, will not sustain him he shall have to abandon sheep husbandry and wool growing in his rich pastures and fertile fields, in the more populous and prosperous sections of his country, where he and his family can enjoy the conveniences and comforts of civilized life, and betake himself to the far-off plains and mountain sides of the West, and require his shepherds and his flock masters to accept such remuneration for their care and their toil as will enable them to lead only the roving, nomadic life of the shepherds of Austral-Asia, or that of the Indian or half Spaniard that camps with his flocks on the banks of the Platte.

I have now, Mr. President, stated why, in my judgment, sheep husbandry in the United States hath hitherto failed, and is now failing, to supply the home demand in wool. Let us see, if my position is tenable or not? I know that statistics are dry—and, to many, uninteresting—but the man that gives no heed to them, ever gropes in the dark. They are the beacon lights, so to speak, that have been left by the pathways that we have traveled. Shedding their light on the policy we have pursued, enabling us to compare it with what we are now doing, and to determine with more accuracy the course to pursue in the future. They are the best evidence as to whether our past course has been one of economy and prosperity, or whether it has been marked with folly and disaster.

Then, guided by these lights, and keeping in mind, that the problem for solution is, how shall we manage a husbandry so that it shall furnish our wool supply? Let us review our government's policy in the past with its wool growers. And first, I think that I may without subjecting myself to unfavorable criticism because of a digression, briefly call attention to the effect that governmental fostering has had upon the manufactures of wool. And, without taking your time to show what protection has been afforded to that great manufacturing interest, suffice it to say, that it has ever been more than equal to and more steadily adhered to than the protection on raw wool. My principal object in calling your attention to it, is to show how astonishingly that branch of manufacture has increased and prospered under the protection it has received. In 1860 there were 1,263 woollen establishments in the United States, where they manufactured wool, with a capital of \$30,922,654, consuming 83,608,468 pounds of wool, paying \$10,153,938 in wages to 43,738 employes and yielding a product, valued at \$65,596,364. In 1880, twenty years later, but including a period of protection, the manufacturing establishments had increased to 2,689, with a capital of \$159,091,869, paying in wages to 161,557 employes \$47,389,087, with an annual product valued at \$267,252,913. The number of factories had more than doubled, the capital invested had increased more than five-fold, giving employment to four times as many hands, and the annual product had increased more than \$200,000,000 in that period of twenty years.

In 1870 the seven leading industries of the United States stood as follows, as to the value of the annual products they yield:

1. Flour and grist mills.
2. Slaughter and meat packing.

3. Iron and steel manufacture.
4. Saw-mills.
5. Foundries and machine shops.
6. Cotton goods manufactories.
7. Woolen manufactories.

In 1880, ten years later, woolen manufactories had out-stripped the fourth, fifth and sixth industries named in the above list, and stood as fourth in the list.

For confirmation of what I have said on the subject of the woolen manufacturers I refer you to the reports of the United States census and the tables contained therein on the subject for the years named.

During the first fifty years of this Government the duty on raw wool was only nominal—not levied for protection, but for “revenue only.” Perhaps I should except a brief period between 1824 and 1832, in which there may have been some incidental protection; if so it was utterly destroyed by the compromise act of 1833.

Let us see what progress was made in sheep husbandry during that half century. On pages 42 and 43, special report Treasury Department, says the Chief of the Bureau of Statistics: “In 1812 the wool-clip of the United States was about 21,000,000 pounds; in 1840, twenty-eight years later, it only amounted to 35,000,000 pounds. It had not doubled in twenty-eight years. During the next ten years, which brought us to 1850, the clip was 52,516,959 pounds, and in 1860 the entire yield was only 60,511,343 pounds. The increase in the number of domestic sheep in the United States from 1810 to 1860 was only about 100 per cent.”

In 1861 Congress gave the wool-grower some tariff protection against foreign competition, and in 1866, only five years later, the domestic yield was 120,000,000 pounds. See same authority page 43. Doubled in five years under protection, when it took us fifty years to accomplish the same result with free trade. From 1861 to 1885 the increase in the wool clip was more than 375 per cent. greater than it had been for fifty years preceding that time, and the increase in the number of sheep was more than 140 per cent. greater. In this connection I desire to call attention to another remarkable fact, and that is this: That protection afforded by customs duties has had the effect, not only to enormously increase the home production of wool, but to equally multiply and enlarge the uses of wool and of woolen goods amongst our people, thereby showing most conclusively the magnitude of the market that may be opened to the American wool grower if he can only be assured that he shall have his own market for the produce of his flocks. Says Mr. J. R. Dodge, the Statistician for the agricultural department of the Government: “The annual requirement for the manufacturers in 1840 was three-fourths of a pound per capita for our population, and it was only the same in 1860, there being no increase in twenty years. Mark these were years of free trade in wool? From 1860 to 1880 under protection the requirement increased from three-fourths of a pound to six pounds per capita. See special report, Treasury Department, pages 51 and 52.

And now, coming to the point that I desire to particularly impress upon the minds of the members of this Association, and if I am in error I shall esteem him a very dear friend that shall show me wherein I err. I assert that sheep husbandry must have the stimulus of a protective tariff before we shall be able to supply the

home demand with the home production. I call attention to the further statistical information found in the same communication. Says Mr. Dodge: "The homegrown wool in 1840 amounted to $2\frac{5}{16}$ pounds per capita; in 1860 it amounted to $2\frac{3}{16}$ pounds per capita, a loss in twenty years of free trade, of $\frac{2}{16}$ of a pound; in 1870, after an era of protection had set in, it increased to $4\frac{2}{16}$ pounds per capita, and in 1885 it had increased to 5 pounds." And from the same page of Special Report, I quote the following language: "The importations of woollens has relatively decreased, notwithstanding the enormous increase of wealth, and the greatly enlarged rate of consumption. The average value per capita of woollens imported between 1750 and 1860 was \$1.09. In the following decade, which included the war period, with its immense waste of clothing, and high cost of goods, the average importation for each individual was reduced to 91 cents, and between 1870 and 1880 it fell to 86 cents."

The increase in our flocks during the period of protection kept fully abreast with the increase in people they supplied..

The whole number of sheep in the United States in 1875 was. 33,783,600

The whole number of sheep in the United States in 1880 was. 40,705,900

An increase of about 7,000,000.

During the next four years, from 1880 to 1884, the number reached 50,626,626, an increase of almost 10,000,000 sheep in 4 years; and an increase in the number of sheep in the nine years last, preceeding 1884, of 16,843,026. This was under the the wool tariff of 1867. In 1883, unfortunately for the wool interest of the country, Congress reduced the duty on wool, and in 1885 there was a shrinkage in numbers in the flocks of the country amounting to 300,000 sheep. In 1886 the decrease reached 2,000,000, and by 1887 the flocks of the country numbered 5,887,312 less than three years previous to that time.

Thus I have shown you the results under nine years of adequate protection preceding 1884, and the effect of inadequate protection under the act of 1883. These statistical facts are all embodied in the special report of the Treasury Department.

Their correctness had the sanction, of course, of Mr. Cleveland's administration.

In 1880 we were just beginning to realize the full advantages of the tariff of 1867 to the wool growers of the country. And the reason why the advantages were not felt at an earlier day is this. It was many months from the introduction of the bill before it became a law. Foreseeing that it would become a law, and believing that the effect would raise the price of wool, importers, speculators and manufacturers sent large orders abroad for foreign wool, which, with the stimulus given to the American wool grower in anticipation of better prices, had the effect to over-stock the market and it took years to dispose of the surplus thus created. Mr. George Wm. Bond of Boston, in a letter to the Chief of the Bureau of Statistics, in speaking of that matter says: The long delay between the inception of the bill and its final passage, resulted in large importations under the old tariff—consequently when the tariff actually went into operation the market was overstocked. In addition to this large quantities of army clothing accumulated during the war were thrown upon the market at exceedingly low prices and added to the

dullness of the demand for wool from the manufactures, so that while the wool growers was disappointed by the operation of the causes named it had the effect, not only to keep down the prices of wool for a number of years, but to discourage the increase of the flock. Hence I say about 1880 we began to reap the full fruition of the protection of the enactment. Let us see what the effect was upon the wool interest of the county?

Mr. Cowgill here quoted figures showing the entire wool clip of the United States for five years—1880, 1884 inclusive—showing a yearly increase of 13,600,000 pounds. He continued:

In 1880 the wool clip of the United States was 240,000,000 pounds.

In 1881 the wool clip of the United States was 272,000,000 pounds.

In 1882 the wool clip of the United States was 290,000,000 pounds.

In 1883 the wool clip of the United States was 300,000,000 pounds.

In 1884 the wool clip of the United States was 308,000,000 pounds.

Showing an average yearly increase of 13,600,000 pounds for the five years named. See Table No. 3, p. 16, of Special Report, Treasury Department.

In 1883 a cruel blow was inflicted upon that great and rapidly growing industry of the country by changing the law so as to destroy a large part of the protection that it was then enjoying. Thus freed from the depressing causes I have named, it will readily be seen how steadily as well as how rapidly, the domestic product increased under proper protection.

There was an increase of 68,000,000 pounds in five years. May I ask if this showing does not look somewhat like that is the way to secure our supply for the home demand.

But this is the presentation of but one side of this question. Let us look at the other. That unjust and uncalled for act reducing the duty on imported wool, making it possible, under inimicable rulings of the Treasury Department, to *not only* do the *greatest injustice* to the American wool grower, but to practice the *greatest* frauds on the revenue of the Government, had precisely the following effect, to which I very earnestly invite your attention. The act of 1883 was in full and effective operation by 1885. Let us see what its results were: In 1885 there was a shrinkage in the domestic wool clip of the country from the preceding year of 8,000,000 pounds, by 1886 the shrinkage was 23,000,000, and by 1887 the falling off in the home product amounted to the enormous quantity of 43,000,000 pounds,

Allow me now to very briefly allude to one or two objections that freetraders are in the habit of making, and upon which they attempt to predicate an argument against the beneficial effects of the protection policy to the wool interest. It is frequently said that the price lists of wool show that during the periods of the greatest protection the current prices were lowest, and assuming that they are correct in their allegations as to prices, they argue that protection is of no benefit to the wool grower. My answer to that argument is this, that I have already shown why from 1867 to 1880 there was great depression in prices of wool, viz.: The large importation in anticipation of the higher rate of duty under the new law, and the immense quantity of army clothing thrown upon the market at extremely low prices. I answer that if you will take the twenty years from 1840 to 1860, two decades of free wool, and compare the prices with the prices of the twenty years

from 1867 to 1887, two decades of protection, you will find the average yearly prices of the two periods to be from 3 to 5 cents per pound better during the protection period than under the free wool period.

The next answer I make to that argument is: I grant that, steadily adhered to, protection has a tendency to and ultimately will reduce the price of any given quantity or article of production or manufacture where all the elements and ingredients that enter into and are necessary to the production or manufacture of the fabric or article are in such inexhaustible stores as are found in this country for the production not only of wool, but of the ten thousand other things that go to supply the wants, uses and comforts of civilized life. If the question is propounded to me, as it doubtless will be by my free trade friend, Why do you want protection if that is what it results in? I can assure him that I have, to my mind, had many more perplexing questions to answer. What the wool grower wants is stability and certainty in the home demand for his wool at fairly remunerative prices. Secure to him the home markets and he asks no more. The man that walks in the dark goes with timid and faltering step, doubting whether it is safe to advance at all, while he who walks in the light of day marches forward with bold and unfaltering pace. Give the wool grower Government protection against ruinous foreign competition, and he will bestow that care and attention to his flocks that will soon enable him to realize a far greater profit, owing to the improved quality and increased product at a less price per pound, than when he is forced to compete with the whole world, admitting that occasionally in the fluctuations of markets, caused by the uncertainty of the supply, he may get a few cents more for a pound gathered from a flock which, for the want of proper encouragement, was suffered to weather the storms and rustle as scavengers, expected to subsist on the refuse of the farm, whose scanty and ragged fleeces fail to compensate for the care they get.

In 1840 the average weight of fleece in the United States was 1.85 pounds; in 1850 it was 2.45 pounds; in 1860 it was only 2.68 pounds. These were days of free trade in wool. What was the result under protection? In 1870, three years after the wool tariff of 1867 went into operation, the average weight of the fleece was 3.52; in 1880 the average weight was 4.70 pounds, and in 1887, says the Chief of the Bureau of Statistics, it was 6 pounds per fleece. May it not fairly be claimed that the increased yield may be set down to the credit of protection? And while the average fleece is now found to weigh 6 pounds, it is within the observation and knowledge of every wool-grower that the best sheep yield much more. Under protection the farmer will continue to improve his breed and increase the care of his flock until the weight of fleece shall have reached its maximum.

Suppose medium wool, in 1860, was worth 50 cents per pound, as the table containing the list of prices that I have already referred to shows it to have been, I have also shown the weight of fleece to have been at the same time 2.68 pounds, hence the fleece brought \$1.34. The same price list in 1887 shows the same class of wool in the same market to have been 38 cents per pound, but the weight of fleece was 6 pounds, and was, therefore, worth \$2.28—94 cents a fleece more under protection than free trade. It takes no more to keep a 6-pound sheep than a 2.68

pound sheep. And so it will be found this is the case with all protected articles wherein we have such inexhaustible supplies of the elements in the raw state to be wrought into a condition fitted for use.

Give the producer, the artisan and the mechanic the benefit of his home markets, protecting him from the ruinous competition of foreign countries, and he will so enlarge his business that the aggregate of his profits will enable him to supply the demands upon his calling at the minimum rate, which will secure reasonable profits to himself as well as enable him to pay fair compensation to the labor he employs. Experience teaches that this is a condition applicable to every productive and manufacturing industry. The fostering care of a tariff has increased the production, improved the quality and ultimately cheapened the cost of the product to the consumer. Such has been the case with respect to the wool interests of this country until the poor man's blanket and the rich man's broad-cloth were never so good and never so cheap as now.

That we may not forget the instructive lessons taught by the experience of the country on these great questions of economics is my apology for having occupied so much of your time in calling attention to dry statistical facts. Let no man be carried away with the foolish delusion that the policy that is best suited to the little island of Great Britain—scarcely larger than many of the States of this Union—is a policy best suited to the interests of this great country, that is a "world within itself" says Mr. Gladstone.

I impress it upon you, that a decade of experience is worth more in either domestic or national economy than unnumbered theories, however plausible they may appear, that have little or no application to your own circumstances or natural surroundings, or the economics of your own country.

DISCUSSION.

C. A. Howland. The paper was a very good one, and Mr. Cowgill has labored hard in gathering up statistics, to give us an insight into the history of sheep husbandry, that we may have a home supply. I will say that this proposition is all right, but whether protection or free trade has anything to do with it, I am not so sure. I claim the tariff has little bearing on the subject. The tariff of 1860 was only for revenue, not for protection. There is a difference between the two. You can go so far as to prohibit the importation of wool to this market. That is a tariff for protection, but where you raise the tariff just enough to let wool in, it don't protect. Now as to the farmers, I never knew when Congress ever passed an act for their protection. I was glad to hear, in the President's address, a *sound* that struck my ear. I, with him, think the time is coming, and is near at hand, when the farmer will look to his own interest, and vote his own interest, whether the candidate be Republican or Democrat. The farmers must take their interests in their own hands, or prosperity will be banished from them forever. Who ever heard of a President, of late years, giving a farmer any position of honor or profit. Beef is cheap on foot, but when you go to buy it from the butcher, it is very high. I heard of a farmer, who recently sold a steer, and told the butcher he would like a fore-quarter as part pay. When the butcher presented

his bill, it indicated the farmer owing him a small difference in settlement between the price paid for the whole steer, and what the butcher charged him for a fore-quarter of the animal. If we need any protection it is certainly on our hides. The stock in a pair of boots cost more than you pay me for a whole hide. I don't mean to advocate free trade or direct taxation; I am in favor of a tax for revenue only. I am not one of those gentlemen who believe that to place a tax on a thing makes it cheaper. Have we a right to levy a prohibitory tax? What did some foreign nations do with our pork, and what a fuss we made over it; haven't they the same right to prohibit our products that we have to prohibit theirs, under the guise of protection to "our infant industries."

We have cheap land, even land to give away as homesteads. They want to produce pork over there and supply their own sausage, the same as we want to furnish our own wool goods here. Then will you petition Congress to raise the tariff on woolen goods. I say, no; if any one needs protection it is the farmer; we have not the show that the manufacturer has. I want to pay my farm hand as good wages as does the manufacturer his employes. The manufacturer goes before Congress and demands protection. Why don't you do the same? You have invested \$100,000 to their \$1,000. Our cause is just, and we can advocate it with more sincerity than they can. They say that I ought to advocate protection, because foreigners may ship in wheat, corn, etc. That's all *faux pas*.

Louis Schueck. I have run a woolen mill for years. I find the greatest drawback to the wool industry in this State is the dog, and I would recommend that the Secretary present to our next Legislature statistics of sheep killed by dogs, and advocate some measure for relief from this curse to sheep husbandry.

Mr. Pope. Only portions of the State are adapted to sheep husbandry. Let us advocate tariff on raw wool and thereby raise the price.

Joshua Strange. We find in the present condition of sheep husbandry that we have an over-production of mutton and are exporters, and an under-production of wool and are importers. Can't we remedy this matter? All wool ought to be shut out.

Mr. Cowgill. I don't think there has been an over-production of mutton; there may have been some exportation, but the high prices of mutton shows that there has been no over-production. There are two things, in my judgment, that are operating to-day that shows interest in sheep husbandry: First—The people are a mutton-eating people. Second—The agitation of a higher tariff protection for wool. I don't think there is any danger of over production of either mutton or wool.

Joshua Strange. The district where I lived in 1887 shipped 141,000 head of sheep to foreign markets. At present price we can not afford to keep our wethers when the mutton is worth more than the fleece.

J. L. Thompson. I think the over-production is only within the past two years, since recently there has been a little margin in exporting wethers. We are getting to be a mutton-eating people. When I can sell lambs at five cents per pound, I have no fears of over-production.

Mr. Howland. If we raise the price of wool we won't have many sheep to sell. Give me twelve or fourteen shearings and I can afford to let my sheep die of age.

Mr. Collett. I understand we slaughter 10,000,000 sheep annually, export 119,000, and import 400,000.

Mr. T. C. Phelps. I want to emphasize Mr. Cowgill's remarks, I believe if we had protection from importation, we would have more wool growers.

Mr. Thompson. I think the paper covers the ground more fully than anything I have ever heard. It should be published in pamphlet form, and I move that a committee be appointed to consider the recommendation contained therein.

The Chair appointed Messrs. J. L. Thompson, Joshua Strange and J. B. Herklers.

Mr. Howland. I do not believe there is any danger of over-production. We have now only thirty-five sheep to the square mile, and have not yet reached the one-thirty-fifth part of our capacity for wool production. As to the carcass its price is controlled by the price of beef. We should have a tariff for revenue only, no prohibitory tariff. All the tariff we place on wool, we pay back when we buy our clothing. If we would benefit the farmer most we should take the tariff off of manufacturers.

Mr. Cowgill. My friend, Mr. Howland, as I understand him, says we have a country fully capable of supplying our home demand for wool. There is a reason why we don't supply this demand, it is because our Government don't protect us against cheap land and cheaper labor. I believe in protection, even if it amounts to prohibition. I have no fears that it will increase the price of manufactured goods. Wool will be cheaper on account of the large supply.

"CAN SHEEP HUSBANDRY BE MADE AS PROFITABLE IN AMERICA AS IN ENGLAND?"

J. L. Thompson, of Arcana. The question of profit will bear an explanation. An English farmer keeps sheep for several purposes, he has poor land and the first consideration is to make manure, and he feeds stock for that purpose. Mutton sells at a higher price than here, they getting from \$10 to \$15 for yearling lambs, averaging from fifteen to twenty pounds to the quarter, or eighty pounds dead weight. Stud flocks are a consideration to supply early lambs for market. We can grow sheep, after we get the right kind, cheaper than the English farmer can. Wool growing in this country is just now in a transitory state. To make sheep husbandry profitable we must do as they do and feed them the same as we feed other stock. Every farmer should keep a few sheep, they should do this without Government protection, for their own protection. Still I believe we should have a protective tariff, my idea is that with proper protection, in the course of ten or fifteen years we will not then need it, as sheep husbandry would increase in that time and be able to take care of itself. If you take the tariff off I am afraid many would go out of the business. The price of wool in Australia now regulates the price in England. Our market regulates itself. Some one said there was no carpet wool in Scotland, this is a mistake. It is frequently argued that sheep can not

be raised profitably on our high-priced land, I say sheep can be and is raised at a profit on land at almost any reasonable price, even \$300 an acre, as is the case in many places in England.

Mr. Beeler. Common flocks or breeding flocks?

Mr. Thompson. Both. In England they have the market at their door, with no middlemen to take the profits. They take their sheep to market in their own carts—pay no freight. I think every thing possible should be manufactured at home, but in the mean time we are compelled to buy some from foreign countries. England is a little country the size of Iowa; there, before you can run a farm successfully you must have \$50,000 capital, and as every thing is against him, he raises that which will bring him the most return, and sheep is one of the principal products of his farm.

Mr. Robe. Don't you think if we let the tariff alone as it is now that we could get along?

Mr. Thompson. Yes, I think we had better let it alone. Only one class of wool comes in under the lowest tariff, and that is carpet wool; 92,000,000 pounds came in last year; here is the greatest wrong. We can produce every grade of wool, and should do it.

Mr. Robe. Do you cut up your hay in feeding?

Mr. Thompson. Yes. In England four-fifths of the feed is root crops, such as mangel-wurzel, turnips, etc., mixed with cut hay, linseed meal, corn; very little oats are fed. Roots are more profitably fed, but I don't think they will ever be fed to any great extent in this country. The most profitable breed of sheep, in my opinion, is the Shropshire. I have tried them for fifteen years, and I am satisfied that they are *the* sheep. I have fed from 400 to 1,000 on my farm at a time, including Shropshires, Merinos, etc. The Merinos could probably stand the most crowding, but can't stand the cold, the fleece is too greasy. The best sheep for a common farmer is a cross between a Shropshire and a Merino.

Mr. Shortridge. How much of a farm will it require to raise 500 sheep?

Mr. Thompson. Two sheep to the acre. Farmers should keep stock of all kinds.

Mr. Robe. In Germany they feed sheep rye and wheat straw, but little rough hay and oats are fed.

HOW CAN SHEEP HUSBANDRY BE MANAGED IN ORDER TO MAKE IT A SUCCESS AS A SPECIALTY ON THE FARM?

M. W. Collett. I do not contend that the sheep industry is a great one in the United States, still we produce 43,000,000 sheep, and 240,000,000 pounds of unwashed wool annually. I can not see why we can not produce our wool with the same protection we have to-day. Sheep should be produced, not alone for mutton, but for mutton and wool combined. A flock-master should select well the sheep he is going to breed. It is a mistake to think that good mutton can not be produced under a heavy fleece of wool. Now, how are you going to breed? I would not discard any good ewes. I cross with Shropshire bucks. Sheep can be profitably

grown on any priced farm land. Early lambs for market are the most profitable. You can add to the growth of these lambs, if you will prepare and feed in dry weather from 30 to 40 cents worth of oats to each.

T. C. Phelps. I have never tried sheep husbandry exclusively as an occupation. Where farms are small I will not say that it could not be made a success if pursued alone. I would in the first place procure as many ewes as my land would justify me to keep in good condition. I would retain old lambs, and in that way would get lambs and fleeces that were lambled in March and would bring me \$5 per head in September. As to the profits on this basis, there is nothing else that will compare with it in the stock line. I cross Cotswold ewes with Shropshire buck lambs. The fleeces average twelve pounds. While I am an admirer of the Cotswold, still in raising lambs for the butcher a Shropshire will get heavier and plumper the first year, but after that I like Cotswolds. I have lambs coming in March. I market them at six and one-fourth cents in Cincinnati in September.

Mr. Thompson. Think he could get more for them just before Christmas. Last year I contracted to sell my lambs to butchers. They will do just as well at ninety days old, but after that it is better to feed until near Christmas for profit.

The proper age for castration is two weeks old. There is no loss of flesh by castration in the growing sheep. For my castrated sheep I received \$8.70, against only \$6.61 for buck lambs.

J. N. Campbell. We bought 200 lambs recently, among them many bucks. We weighed them and put on pasture. They began to frolic and gained little in weight. Shippers say that castrated lambs sell best. We cross good grade ewes to Shropshire bucks, feed cut clover hay and sheaf oats. I wintered sixty-two ewe lambs last year, fed from a one-half to an ear of corn per day to each. They weighed at shearing from 120 to 140 pounds each. Other sheep growers wanted to know how we fed. Cotswold ewes crossed with Shropshire bucks make a good grade sheep. Raise February and March lambs. We had a few as early as January; only three lived. We changed this year to get lambs later. Sheep husbandry alone can be made more profitable than mixed farming. I raise three times as much corn to the acre where my sheep run than my neighbor. Sheep will eat a less amount of steamed hay than dry, but the ewes will give more milk. I sold buck lambs 115 pounds at four and one-half months. Lambs should not come earlier than March or April.

T. C. Phelps. I favor January lambs for the butcher. March is too late.

Mr. Burnside. January is generally cold and dry and you have a large per cent. of loss.

Mr. Cowgill. Your lambs should come early. I have 100 or 200 coming in April. You have better fleece from the ewes. From 120 ewes lambing in February I raised 129 lambs; had six ewes to die at lambing. I have lately regretted that I did not castrate earlier—say two or three days after lambing. I cut the end of the sack and take out testicles, and don't lose one per cent. if I do it myself.

Mr. Miller. I have castrated 130 in that way and have never lost a lamb,

COMMITTEES.

Messrs. Herkless, Thompson and Robe were named as the Committee on Programme. On Expert Judges, Messrs. Thompson, Phelps and Williams.

Adjourned to 8:30 A. M.

SECOND DAY.

JANUARY 22, 1890.

The Association met, with President Cotton in the chair.

The Committee on Programme reported as follows:

PROGRAMME FOR 1891.

1. President's Address.
2. The Wool and Mutton Industry of the United States. S. W. Dungan, Franklin.
3. Care and Management of Sheep as Regards Better Profits from Sheep Husbandry. B. F. Ginz, Star, Rush Co.
4. The Merits of Cotswold for Wool and Mutton. T. C. Phelps, Greensboro.
5. What Would Free Wool do. A. C. Cotton, Traders' Point.
6. How Can We Produce a Sheep that will Yield the Heaviest Fleece and the Largest Mutton Carcass, Combined, and what are the Comparative Values of Crossing the Different Breeds with Each Other? I. N. Miller, Upland, Ind.
7. Have We Now in Indiana the Number of Sheep Which Our Improved Lands Will Warrant Us in Keeping Profitably, not Diminishing Our Herds of Other Stock? J. N. McCampbell, Marshall.
8. Shropshires the Best Sheep for the Common Farmer. Marion Williams, Muncie.

The Committee on Expert Judges, reported: Recommending T. C. Phelps, Greensboro; J. R. Tomlinson, Fairland; Cal. F. Darnell, Indianapolis; Thomas Nelson, Bloomingdale; S. W. Dungan, Franklin, and J. W. Robe, Greencastle.

The Committee on President's Address through the chairman, Mr. Robe, reported.

We, the committee appointed to examine the President's Address and make report thereon, beg leave to say that there is good advice, brother wool growers, in the same, and we cheerfully commend it to them for their careful consideration, especially the part urging the farmers to organize and vote as a unit for their interest, especially for legislative men who will legislate to the interest of the farmer.

The Committee on Sanitary Legislation at the last session of the Legislature, reported as follows:

We, your Committee on Legislation, beg leave to submit the following: Upon investigation, your committee learned that Representative Trout had already introduced a bill so nearly covering the ground in favor of sheep husbandry against

the ravages of dogs; that said bill might have been delayed by the offering of amendments, that perhaps, prevented its passage, and considering it practicable at that stage to recommend its passage, rather than to introduce something that would thereby jeopardize the passage, your committee would most respectfully recommend that this Association at this time do appoint a Legislative Committee to draft a bill and present at the convening of the next Legislature for the protection of sheep husbandry against the ravages of dogs.

President I. N. Cotton and Messrs. Cowgill and Strange were appointed as the Committee on Legislation for 1891.

Mr. L. B. Skinner offered the following, which was adopted:

WHEREAS, The appropriation of five thousand dollars by our State Legislature, to be expended in conducting the work of Farmers' Institutes, under the management of Prof. W. C. Latta, of Purdue University, has been of vast benefit to the farmers and producers of live stock of our State; and,

WHEREAS, We believe the discussions at these Institutes will tend to increase the sheep industry; therefore, be it

Resolved, by the Indiana Wool Growers' Association, assembled at the State House, Indianapolis, this 22d day of January, That we petition our Legislature to increase the appropriation to ten thousand dollars annually.

Hon. Alvin P. Hovey was announced and introduced to the Association.

THE GOVERNOR'S REMARKS.

GENTLEMEN—I should like to make a speech if I was well enough informed on the subject you have under discussion. But I will say that in my view Indiana is not best adapted to sheep husbandry, except on the hilly lands. We have the finest State, according to area, in the United States, from an agricultural point of view. I hold in my hand "Mulhall's Dictionary of Statistics." The United States had 49,237,000 sheep in 1882, or 95 sheep to every 100 inhabitants. We have less than LaPlatte and Australia, with 76,000,000 and 65,000,000 respectively. There was a falling off in sheep raised in the State last year. The cause for it, I think, is that the land in our own State is so fertile it is better adapted to agricultural products than to sheep culture. Land here ranges from \$10 to \$100 per acre, which is too high priced for sheep culture. I have very little knowledge of sheep raising in this country, but my idea is it will move west as irrigation goes forward on the vast plains in that great western country. They are engaged now in damming up mountain gorges, furnishing immense reservoirs of water for irrigation purposes, which promises to develop those arid plains wonderfully in the near future. The cultivation of sheep for wool alone should be encouraged by your Association, as at present we are compelled to import a very large quantity of our fine wool used for manufacturing purposes.

I thank you, gentlemen, for your kind invitation to meet with you.

Mr. I. N. Miller, of Upland, Indiana, presented a paper on

"SHEEP THE SOURCE OF DIVINE RESPECT AND THE BLESSINGS OF DOMESTIC COMFORT."

"And Abel was a keeper of sheep, but Cain was a tiller of the ground. And in process of time it came to pass that Cain brought of the fruit of the ground an offering unto the Lord. And Abel he also brought of the firstlings of his flock and the fat thereof, and the Lord had respect for Abel and his offering, but unto Cain and his offering he had not respect.

"And Cain was very wroth and his countenance fell. And the Lord said unto Cain: Why art thou wroth, and why is thy countenance fallen? If thou doest well shalt thou not be accepted? And if thou doest not well sin lieth at the door.

"And Cain talked with Abel his brother; and it came to pass when they were in the field that Cain rose up against Abel his brother and slew him."

It appears to my mind we have arrived at a period of time in the affairs of our country where this reading of the scriptures interprets a twofold meaning synonymous with the present state of divided attention in legislative enactments and the unprofitableness of grain raising.

In the first place we observe Cain and Abel, each engaging himself in his chosen calling, the interests of one seemingly identical with the other in the order of agricultural pursuits, inasmuch as the fruits of their labor are the principal articles of necessity in furnishing mankind with something to eat and something to wear.

But we learn that in process of time when Cain brought of the fruit of the ground and Abel the firstlings of his flock and the fat thereof, as an offering unto the Lord, for Abel he had respect, but for Cain he had not respect. Neither has it been clearly stated in succeeding chapters of the Scriptures just why the great Jehovah and God of the Jews should have been such a respecter of individuals for the avocation they chose to pursue, but if I were to venture an interpretation it would be, that the prosperity of the shepherd and his flocks insured the blessings of domestic comfort and the ultimate security of a nation's wealth. But for the sheep the patriots of this country sought to protect and our ancestors carried with them into the great Northwest Territory, of which a portion embraces the fertile and populous State of Indiana, could they have provided themselves with the simple comforts of life with so little cost besides their own labor. What has been true for the beneficence of sheep in the past is as true to-day and will be for the future.

Sheep have a value unequaled by that of any other of the domesticated animals, in affording both food and raiment. Their flesh and fat have no superior as being the healthiest and best of any meat that can be eaten.

Some authors claim that the ratio of nutrition in mutton contains, next to eggs, (which holds ounce for ounce of weight and nutritive value) the greatest proportion; that is, for each pound of meat, there is fifteen ounces of nutrition, while in beef there is fourteen ounces to the pound, and in pork but five ounces.

After supplying the inner-man with wholesome and nutritious food, the wool of sheep furnish the means in clothing the body with the most comfortable and best raiment for all climates known to the world.

Again, we read that Cain was very wroth, because of his failure to please the Lord, and he said unto Cain, "if thou doest well, shalt thou not be accepted? But if thou doest not well, sin lieth at the door." Is this not true in our time and with us? The spirit of Cain has been manifest in the length and breadth of the land for more than a decade, in the redoubled efforts of tilling the ground, regardless of what was to follow, and truly in the language of our text they were accepted at first for well doing, but later they have met with the reverse of those blessings.

Right and left, all around us, have the farms been kept under the plow by successive crops of corn and wheat, oats and clover, annually sapping the fertility from the soil until it is rapidly diminishing in the yield and quality of grain so that the average annual yield taken in the aggregate, is maintained only by supplementing the acreage. How long this can continue or will hold out, would be a matter of conjecture. As it is, the surplus seeks a foreign market, supplied largely from other countries, that through the manipulation of trade, depresses the price to the producer below cost of production.

"And Cain was wroth and his countenance fell. And the Lord said: If thou doest not well sin lieth at the door."

RAISE LESS WHEAT AND MORE WOOL.

If our wheat crop reaches five hundred millions of bushels yearly, and beside home consumption we have nearly two-fifths of that amount for export (in wheat and flour), and we produce less than half of the wool and woolen fabrics needed in this country, buying from abroad the rest, why not raise less wheat and more wool by reducing the acreage of the cultivated crops and in their stead seeding the land to some of the varieties of permanent grasses, increasing the flocks in proportion to the demand for both wool and mutton? In that way would our lands maintain, if not increase, their fertility, and not, as at present, would we see the very sap and substance of our soils sent to Europe annually, by the hundreds of tons, to feed their people at the expense of ours.

We could raise at least one hundred millions of sheep, where we now have less than half that number. Mixed farming, or the rotation of crops, produces good results, but mixed husbandry attains to greater profits by the economic value in keeping a fair proportion of animals on the farm to consume the products, converting them into greater value, and, by returning to the soil all animal waste, in the order of nature. In fact, this can be the only true and successful way of retaining the fertility of the land indefinitely. The value of sheep as a factor in adding fertility to the farm, symbolizes their intrinsic value in the oft-repeated legend as being the "golden-hoof," for wherever they choose to tread their value is known.

"And Cain talked with Abel, his brother, and it came to pass when they were in the field that Cain rose up against Abel, his brother, and slew him."

Oh, I fear the voice of Cain bodeh harm, for many hearken unto his speech, and the wrath of envy waxeth warm when the end draweth nigh. Then shall our flocks, for want of Abel, their keeper, become the gifts of those in a far-off land, where tens of thousands roam the country with but little cost to their owners, whose wealth of profit adds nothing to our people.

While we have a great country, and possess many advantages in every respect, yet our expense for maintaining the institutions and public improvements in general create a constant increase in the taxation, and the farm and live stock always having to contribute each year the largest share of the burden; hence, the fear that we can not raise the necessary amount of sheep our country demands, either for wool or mutton, or both, without a fair share of protection for this sacred production. Therefore, in supplying the necessary wants of our people, are not the industrial interests identical, one with the other? Then, say we, productions of the farm and manufacture, capital and labor, trade and transportation, each should, in the spirit of true, devoted patriotism of American independence, stand by the flag-staff that floats the emblematical stars and stripes: "The Union Forever! Equal Rights to All! Special Privileges to None!"

SHEEP FOR THE AVERAGE FARMER.

What breed of sheep is best for the average farmer will not, in my opinion, all belong to any particular breed, so much as it does in that we can keep the sheep. We have a number of distinct breeds to choose from. Some classed as mutton breeds, and others known more for the quality of wool they possess; but none that are raised exclusively for either mutton or wool. Some countries, even some localities, seem better adapted to one class of sheep, while not far distant would favor be shown another class. The conditions of soil, climate and individual interests, are considerations that have their influence in determining what class, or breed, would suit that particular place or methods of farming. Soils naturally rich in fertility for the principal cereal crops, would be in favor of the larger breeds, from their size, and attaining maturity at an earlier age, while with lands less fertile or somewhat broken, the smaller breeds would be equally as profitable in the adaptability they have for grazing, and the longevity for weight of fleece, and life of the animal. We have room for all, and a place for each, so far as the difference in quality of mutton they furnish, or the class of wool they produce, as they are all in demand as staples of necessity. Consequently it is not so much in what a single type or class of well bred sheep we may possess, with another, as that we may be able (Abel) to cope with our unwary brother (Cain) before the fatal day of ungovernable wrath that took the life of one and cursed the other, "from the earth (land) which hath opened her mouth to receive thy brother's blood from thy hand." "When thou tillest the ground henceforth it shall not yield unto thee her strength." * *

Some may think this is all given in a strain of sarcasm, but I view it as a parallel, logically and seriously, befitting our destiny in sheep-husbandry.

Flock-masters and shepherds are generally meek and humble, much like their animals, and seldom make an aggressive effort to protect themselves where popular

censure might go against them. But if sheep husbandry in America ever succeeds to what it should be, we will have need of getting legislation, both State and national, to protect its interest. We will not be understood as wanting the States to "subsidize" every sheep-killing dog, or that "Uncle Sam" would place an armed sentinel over each sheep-fold throughout the country. First, we should get State laws enacted that would abate the dog nuisance, of allowing prowling curs to roam around the country, and their owners ready to prosecute some sheep raiser if their dog gets lame in the shoulder, and fails to get home on time, though the flocks are constantly exposed to the annoyance, and frequently fifty dollars or one hundred dollars worth of sheep destroyed at a single raid in the county. Second, by the Government fixing a specific tariff rate on wool, that will prevent fraud and undervaluation, and of sufficient amount to make competition between the sheep barons of South America, Australia, and other countries, with ourselves, as to be of some value to the wool growers, and the whole people of the United States.

Mr. Robe. I believe, like the gentlemen who just read, we ought to produce our own wool and less wheat.

Mr. Cowgill. I heartily concur in the paper just read.

Mr L. B. Skinner, of Denver, Indiana, read a paper entitled:

"SILOS AND ENSILAGE."

Mr. President and Gentlemen of the Indiana Wool Growers' Association:

It is with pleasure that I meet so many of you again at this our annual gathering for the good we can do, and to discuss the subject of caring for stock.

The year just closed has been one that will long be remembered as one of the most profitable years in many to the sheep and wool growers of the State of Indiana. With mutton selling in our markets for more money per hundred weight than either pork or beef, there must be more money in sheep, and by cheapening the cost of production we can make it even more profitable, and I believe it can be done by the use of the *silo*. On this subject so much has been said and written that I can give you nothing new. Silos are being built by practical farmers all over the country, and with few exceptions are giving good satisfaction, and all of our experiment stations except one have fallen into line and say that ensilage is all right, and he, Professor Sanburn, is forced to admit that there is less waste in ensilage than dry fodder. He estimates the loss of ensilage at 17 per cent., and fodder at 44 per cent., which gives an advantage of 27 per cent. in favor of ensilage.

Professor Henry says the loss and feeding value between ensilage and good dry fodder is very small, but says "when I say good dry fodder I mean it, but the average farmer has not the time or money to waste in curing fodder in that way."

I have a letter from him stating that there are 2,500 silos in the State of Wisconsin, and many more will be built the coming season. He also writes that at farmers' institutes nearly every meeting men give their experience with ensilage, and in most every case they were satisfied with it. If not successful in the first attempt it was owing to some slight mistake in the building or filling, which they could correct next time.

The advantages of ensilage are many, and the disadvantages few. Our long, cold winters, with stock shut up around strawstacks and in stables without anything to eat but the dry hay, straw and weather-bleached fodder, is it any wonder that our stock looks thin and poor in the spring, and takes half the summer to get them in good living condition?

VALUE OF ENSILAGE FOR SMALL FARMS.

With the addition of ensilage most farmers could bring their stock through the winter in very good condition, then when turned on grass they would be ready to grow. I find that stock will eat more dry rough feed when fed ensilage. A silo of 100 tons capacity would soon pay for itself on any medium sized farm. For the two, three, four and five hundred acre farms I have nothing to say. These men will take care of themselves. The small farmers are the ones that the silo has come to help, and who above all others will be benefitted by it.

EXPERIENCE WITH A SILO.

I built and filled my silo in 1888 for the first time; built of wood above ground against end of barn; opening out in feed room. Used 2x8 studs, 16 feet long, drop siding on outside; on inside for sheeting rough oak boards, two thicknesses, with building paper between; two partitions built same way makes three silos. Had a fair quality of ensilage, and fair success in feeding it, but some of it spoiled on account of building not having been built air-tight. Filled it again this year the first week in October; B. & W. ensilage corn; put in eight acres of thinly-drilled corn—something like 100 tons. It was not quite ripe enough to make good sweet ensilage, when cut and drawn direct to silo, as we did this year, without wilting.

MY WAY OF FILLING

Is this: We used two teams to dray corn from field to silo, as it was not forty rods away. The corn was cut and placed on low wagons with hay-ladders on, by the two men and teamster, without throwing it on the ground. The teams are not out of the field long, as by the use of chains placed on hay ladder, and fastened at rear end of rack or wagon, reaching to front end, and with another chain fastened to building, the teamster fastens the two chains together and drives off, and rolls load of corn off the back end of hay ladder five or six feet from cutter. It is then picked up by two men and run through a No. 16 Ensilage cutter, and elevated into silo by a thirty-foot carrier attached to cutter, at the rate of a ton in ten or twelve minutes. In silo it is kept leveled and trampled down by one good man or two poor hands. We filled each bin to top, let it stand two days and a half to settle and heat, then filled again to top. Let it stand some time, covered with straw five or six inches deep, and on top of straw put six or eight inches sawdust. Let it stand four to six weeks and it is ready for feeding.

FEEDING SILAGE.

When ready for use remove covering, take it all off the top of one silo, as it will not freeze or spoil. Keep the feed level, and remove some ensilage from whole surface every day or two. Now, if your work is well done in every way, and your silage crop ripe enough, your building strong and air-tight, you will have feed that all kinds of stock will relish and do well on. We are feeding it as a part ration only to all kinds of stock, except sheep and milch cows; it is about all we feed them, and many of our ewes are fat enough for mutton, never had stock do better, and the feed has been ensilage, straw and fodder.

CAUSE OF FAILURES.

Where men make failures of ensilage, it comes from two causes, and two only; they are either improperly constructed, or filled with watery, immature crops. You can not make good food out of half-matured corn or clover. Let your silage crop stand till it is ripe enough to make good fodder or hay, then it will have a higher feeding value, and will be sweeter. Stock will do much better on it.

I believe, from my experience, it would pay a beginner to get some one to help him, one that has had experience. It would have saved me quite a loss of food the first year, but now I would rather undertake to put up one hundred tons of ensilage than make fifty tons of hay; for I am not at the mercy of the weather as the hay-maker is, and can put up ensilage cheaper than hay. And one more point in concluding, why not use a crop that will make 100 to 200 tons of feed off ten acres, instead of a crop that will only make fifteen to twenty tons of hay?

Mr. Robe. I notice that he said it was cheaper to put up ensilage than to store away hay.

Mr. Skinner. That is, the cost of putting up one ton of hay is equal to two of ensilage. It is cheaper to put up ensilage at thirty-five cents per ton than hay at seventy cents. Weather does not figure in putting up ensilage, either.

Mr. Howland. Is ensilage alone a proper food for milk cows?

Mr. Skinner. No; it should be mixed with dry food.

Mr. Robe. Is not ensilage preferable to brewery or starch feed?

Mr. Skinner. Have had no experience with the brewery or starch feed.

Mr. Pierce. One of the great advantages of ensilage is that in a silo seven times the amount can be stored in the same space as of dry fodder.

At this point Mr. Pierce gave a description of a "silo" from models he had with him, which was very entertaining and instructive to those wishing to construct one. He said, in conclusion:

The best time to secure the ensilage is about the last week in August. This brings us to the time when the clover is in bloom on the second crop; also, the corn will then be in "the dent."

I have thus far endeavored to give as simple and practical a plan of building the silo, and what we have found to be the best to fill the silo with, and now I will give our plan of filling: Get a feed cutter with reversible carrier, and if you do

not feel like buying an engine rent your power. After all is ready for the "word go," and you have one man in the silo, go to your clover field and cut about one ton and bring into the barn floor where the cutter is in waiting. Run this through the cutter, and it will go up the carrier and to the silo below, where the man will, if he has never been there before, think the whole clover field is coming in for a place in the silo at once.

After this one ton is nicely stowed away, take an eight-quart pail of equal parts of pulverized charcoal and salt and thoroughly sprinkle the ensilage just put in. Then go to the clover field for another ton and put it into silo B, a ton in silo C—placing the charcoal and salt on each layer as in silo A. As soon as you are through with silo C go to the corn field for a ton of corn, and treat the corn the same as you did the clover, and when all three silos are filled cover them over air-tight with tarred paper and heavy plank.

George Merritt, a large woolen goods manufacturer of Indianapolis was present, and being called upon said:

MANUFACTURER MERRITT'S REMARKS.

I came here to listen, not to speak. I don't think there is any danger of over-production of wool. You should return to the soil what you take from it; to do this most successfully, raise sheep on your farms. The question at present is to see to it in the modification of the tariff, that the farmer gets some protection along with the manufacturer. The farmer must have the money to buy the manufacturers' wares, and should therefore be able to make a reasonable profit on his products. You can buy a Holyoke, Mass., alpaca now at 34 cents laid down in the mills. English people pay a higher price for mutton than we do in this country. English unwashed wool only shrinks 20 per cent., the average Indiana wool of same grade shrinks 45 per cent. We want a little higher tariff, but protect every interest equally, the farmer and manufacturer alike. Free traders in speaking on the wool question, contend there is very little labor in the production of wool; this is a mistake. Breeders of sheep should be protected. The matter is not a partisan matter, and is made so only by demagogues; I hope none here will give it a partisan bearing. With proper and adequate protection you can produce every variety of wool and as much of it as the manufacturer can consume. As to fine wool, as a matter of fact it gets the least protection, when it should have the most. At present there is not enough fine wool in the country to meet the demand, that is because medium grades have paid the best, and you grow it.

Mr. Howland. I want to say that Mr. Merritt is one of the manufacturers that deal fair with us farmers; if all were like him we would have no cause for complaint. All the farmer wants is fair treatment. There is one little point I want to make and that is, I don't believe the farmers would be satisfied with less than 25 cents per pound for their wool.

Mr. Darnell offered the following, which was adopted.

Resolved, That the Indiana Wool Growers' Association, now in session, hereby indorse the West as the proper location for the World's Fair of 1892.

Treasurer J. L. Thompson reported as follows:

Balance on hand from 1889	\$16 25
Received from Secretary for dues, 1889	29 00
Total receipts for 1889	<u>\$45 25</u>
Disbursements, 1889:	
Secretary's bill, see vouchers.	\$7 75
Short-Hand Reporter.	10 00
Total	<u>\$17 75</u>
Balance on hand	\$27 50

January 22, 1890.

JOHN L. THOMPSON,
Treasurer.

Mr. J. L. Thompson offered the following, which was unanimously adopted:

Resolved, That it is the sense of this Association that mutton and wool in combination can be profitably produced on our most productive and highest-priced lands.

Mr. Joshua Strange, of Arana, Ind., presented the following paper on

"DOES DEPRESSION IN THE WOOL MARKET HAVE THE EFFECT TO IMPROVE THE FLOCK, AND HOW CAN IT BE?"

The question embraced in this subject is a very intricate one to solve to the full satisfaction of our minds. It may be answered correctly, both in the affirmative and negative. In a broad-sense view, the less paying an industry is, the more likely it is to suffer decay, or deteriorations; that is the general presumption, and, to a measure, is probably true; but, however, the position the wool industry occupies in this country may, to a degree, has a tendency to reverse the "rule." As mutton is in greater demand every year, and the consumption of mutton by the American people is on the increase, it gives a stimulus to the flock-master for improving the flock that did not exist so favorably in the past.

There is no meat producing animal that can be produced more cheaply than the mutton, and with a better profit, not considering the wool. When mutton becomes as profitable as it now is, the wool does not enter into consideration only as a clear profit, then the question of improvement of the flock, both in mutton and fleece, becomes a matter of importance to the producer to increase the relative profits, and therefore the depression in the wool market has only the tendency to lessen the profits on a part and not on the entire commodity, and therefore would not have the tendency to retard the improvement of the flock, as we see the effort has been for some years to improve the flocks by the continuous infusion of new blood. In the question of sheep husbandry in this country, rises the question of political economy, as in the same industry one article is an under-production and the other an over-production, one under-protection and the other beyond the power of protection. A similar industry occupies the same position in political economy

in part as do the sheep. That is the cattle, with the beef and the hide, the one beyond the power of protection, and the other an under-production to the amount of four million and upward annually, and not protected.

Notwithstanding this condition and the depressed condition of the cattle market, the radical weeding of the herds was never more marked than in the past few seasons, to the betterment of the herds and industry. The same is true, measureably, in the flocks, as these figures will show.

In 1882, in the United States, there was 45,016,224 sheep, and they produced 272,000,000 pounds of wool. In 1885, there was 50,360,243 sheep, and they produced 308,000,000 pounds of wool. In 1887, 43,544,755 sheep, and they produced 285,000,000 pounds of wool, showing an increase of wool to the amount of 13,000,000 pounds more off of 43,544,755 sheep in 1887, than was produced by 45,016,224 sheep in 1882. And to further illustrate the condition of sheep husbandry in this country, it might be of interest to some to submit the prices of wool from 1860 to 1887, giving the highest and lowest price as compiled from the reports of the Secretary of the Treasury for 1863 and 1873, reports of the New York Chamber of Commerce, the New York Shipping List and Price Current, and the New York Produce Exchange Reports. Commencing with—

<i>Year.</i>	<i>Lowest Price per lb.</i>	<i>Highest.</i>
1860	\$0 34	\$0 40
1861	22	45
1862	40	65
1863	62	80
1864	75	1 10
1865	70	77
1866	25	27
1867	25	37
1868	34	37
1869	32	35
1870	34	45
1871	32	63
1872	45	67
1873	32	57
1874	36	48
1875	38	48
1876	25	43
1877	32	43
1878 (the lowest for 30 years).	20	33
1879	27	50
1880	25	45
1881	21	47
1882	37	48
1883	37	42
1884	33	38
1885	28	54
1886	30	34

With a production of 308,000,000 pounds of wool in 1885 we lacked but 18.6 per cent. of supplying the home consumption of our factories, and the decrease in the number of sheep is largely due to the pruning of flocks and the increased demand for mutton, making the feeding of sheep a profitable business. There is more to the flock-master in the wool production, in the establishing and maintaining even prices, in the classing or grading of all wools by some test that would reach as nearly as possible a scoured basis, as wool is marketed now in all kinds of condition. It is impossible for the wool merchants to do justice to the individuals having their wools in the best condition. Sheep that are stabled, the wool contains more grease than those that run out, and others with dust, dirt and sand in the fleece, and, probably, sometimes a little salt, as a Yankee once said to me: "Why don't you salt your wool; a wool-buyer never tastes wool?" These things with all the tags that can be secreted has a great deal to do with the deplorable condition of the wool market.

The future flock, to meet depressions in the wool market, is first to have the most profitable sheep for mutton and wool, which probably is embraced in cross breeds. The second is to keep the sheep in a fine merchantable condition, that the wool will be of the best quality of the grade produced. The depressed market for American wool is largely due to the poor condition that the wool clip is put upon the market.

As to improving the flock under depressions the finer fitting of the fleece for market will be pouring oil on troubled waters.

I have held that the affirmative is more likely true in the present stage of the industry. The subject queries further, and "How can it be?" It is fairly reasonable to suppose in these days of progressive farming in this country of bountiful productions, that articles must be produced at less cost by a system of general improvements in all branches of industries, by better kinds, and the best selections of the kind, as the day is fast approaching that the relations of all countries will be so close that supply and demand will control the prices of all commodities.

DISCUSSION.

Mr. Beeler. I have not much to add to what Mr. Strange has said on the subject. When mutton is low and men are getting rid of their sheep, that makes the price of wool low—so much being thrown on the market at once. When the price of wool is down no man likes to pay fancy prices for improved breeds; prices going up makes a demand for high priced bucks.

Mr. Thompson. That is the result, but it should not be so. In 1884 and 1885 you could not talk to a farmer about buying. He sold off what he had and went out of the business. In times of depression we should buy and improve our flocks.

Mr. Robe. That may be the case with some sheep growers. But when prices are low I cull out my poor stock, weeding out unprofitable ewes, discarding sheep under size, and bare bellies. In that way I improve my flock. Now if sheep were on the rise that bare belly would be retained to bring me a lamb for the market. In the past fifteen years I have never allowed a buyer to pick sheep from my flock; I do that myself. Most any sheep will get a bare belly in six years.

The election of officers resulted as follows :

OFFICERS FOR 1891.

President—Hon. Isaac N. Cotton, Traders' Point, Ind.

Vice-President—Hon. Calvin Cowgill, Wabash, Ind.

Secretary—J. W. Robe, Greencastle, Ind.

Treasurer—Jno. L. Thompson, Marion, Ind.

EXECUTIVE COMMITTEE.

Messrs. S. W. Dungan, Fielding Beeler and Robert Mitchell.

Mr. J. L. Thompson, from the Committee on Resolutions, reported the following, which was adopted :

WHEREAS, The worthy effort and able paper prepared and read before this convention by the Hon. Calvin Cowgill, of Wabash, Ind., is worthy of the highest praise,

Be it resolved, That it is the sense of this Association that said paper be published in the weekly Journal in full, and that the Secretary be instructed to secure and send to each member of this Association one copy at the expense of the Association.

WHEREAS, We believe that with proper and adequate protection to our industries we can produce in sufficient quantity every variety of wool needed by our manufacturers in the production and manufacture of every fabric needed or used by our people,

Therefore, resolved, That we demand of the Congress of the United States such adjustment of the present tariff duties as will finally secure to American wool growers the markets of our country.

The convention adjourned *sine die*.

POULTRY BREEDERS.

The annual meeting of the Indiana State Poultry Association was called to order at 7 P. M. January 18, 1889, President William Tobin, of Indianapolis, being in the chair, and the minutes of the September meeting were read. This meeting was held Thursday night of State Fair week and was very largely attended. At that session ten new names were added to the roll of membership, and Hon. Oren Scotten, of Detroit, Mich., was elected an honorary member.

The President delivered an impromptu address. He asked what the Association thought about continuing during the present year the arrangement made with the Board of Agriculture last year. He thought the Association should be incorporated. He had been compelled to stand responsible for bills incurred by him as President of the Association, when the goods purchased were for the sole use of the Association. No merchant in the city cared to enter upon his books the name of an association that was not incorporated. It could neither collect bills or be sued according to law, and it places too much risk on the shoulders of the contracting member.

Further, he thought the Association should become a member of the American Kennel Club. The dog department had been a great aid to the show and he was proud of it. The display was excellent so far as it went, but he was satisfied that if the Association would join the American Kennel Club the display another year would be very much better. He felt certain that we would never get the best dogs in the country until we unite with the American Kennel Club.

A partial report of the Secretary and Treasurer showed the Association to be upon the very safest kind of footing, and also that at present there was \$695 60 in the treasury.

Applications for membership were called for, and S. D. Hostetter, Whitesville; James Sarvis, New Market, and J. E. Dougherty, of Lotus, were unanimously elected.

On motion of Secretary E. A. Pierce, the date of the next show was fixed for January 13 to 19, 1891.

The President. Well, gentlemen, what shall we do about incorporation?

Mr. Jenkins. What will it cost?

Mr. R. T. Wells, Montmorenci. I notice Mr. George Ewald, of Cincinnati, is present. He has had some experience in incorporating Poultry Associations, perhaps he could lend us an assisting hand in this matter.

Mr. George Ewald, of Cincinnati. I don't think it wise policy to incorporate. At least it has not been so in the experience of the Cincinnati people. You are required by the laws of Ohio to have so much of the stock subscribed and so much paid up. I don't know how it is in Indiana, but presume it is much the same. The great trouble with an incorporated association it gives a few men too much authority. They arrogate to themselves powers that were never delegated to them by the association. And what are you going to do about it? They have a majority of the stock and can run the whole grist into their own pockets. We tried it to our hearts content. In fact, until it broke up the body corporate. The trouble was a few men as directors voted in some dead heads that were not worth the seats they occupied. They employed a lawyer to attend to incorporating the thing, after they had induced him to become a member of the association and he did so and brought in a bill for the modest sum of \$150 for his services.

The President. My idea is this. If the Association is incorporated the proper officers can go ahead and make the necessary contracts that are required just before the show is to occur without becoming personally involved.

Mr. Ewald. The laws of Ohio require that the officers of a corporate body shall be paid a stated salary. After you pay a lawyer \$150 and officers \$40 to \$50 more, each, you will have to make assessments, and our Association won't stand assessments.

Mr. B. T. Pace, of Salem. I think it would be a good plan to change the By-Laws to meet the requirements. The property of an incorporated body is held in trust by a board of trustees, and the business is transacted by a board of directors, and the name of every officer must go on record.

Mr. Jenkins. I move that the President, Mr. Pace, and Mr. Conger be constituted a committee with power to act, to look after this matter and report at the next meeting of the Association.

The motion prevailed.

The matter of incorporation having been disposed of the President pressed the matter of an offensive and defensive union with the American Kennel Club.

Mr. J. E. Dougherty, of Lotus, Ind., was asked what steps would necessarily have to be taken in order that the Indiana State Poultry Association might become a member of the American Kennel Club.

Mr. Dougherty replied that he was not able, on the spur of the moment, to tell just what steps would have to be taken, but he was aware of one thing, and that is that this Association will have to accept the rules of the Kennel Club just as they are; that they are very strict in every sense, and are invariably enforced. The Association will have to offer a stipulated cash premium on every class entered, and every dollar of these premiums must be paid, or the officers of the Association are disqualified, and the Association itself suspended until they are paid. There is no such thing as borrowing somebody else's dogs and showing them as your own. Every dog must be the property of the person showing him, and if any deception is practiced the exhibitor not only loses the premium awarded him, but is debarred from showing again at an American Kennel Club show.

There must be no pro rata business. Loose laws won't do in the American Kennel Club. But I can assure you one thing, that is, if you hold a show under

the rules of the American Kennel Club you will get twice as many, yes, four times as many good dogs as you get now.

Mr. W. D. Page, Fort Wayne. If you undertake to act with the American Kennel Club you will all the time be playing second fiddle. The entries of dogs involve a great deal of difficulty and trouble. Besides it will introduce an element of discord. He moved that it be the sense of this meeting that this Association do not join the American Kennel Club. Motion carried.

D. H. Jenkins presented the following paper on State Fair Exhibits:

"WHAT I KNOW ABOUT EXHIBITS OF POULTRY AT THE INDIANA STATE FAIR."

It is fortunate, gentlemen, that you are not compelled to listen to what I don't know on this subject, rather than to what I do know, as it would take up a great deal of your valuable time.

The State Fair, as I understand it, is intended to be an educator of the people, but oftentimes the object is perverted into money making. But then one can hardly blame the managers, when it is an absolute fact that many who exhibit at fairs will lie awake at night, studying how to get the most money from the State Board at the least expense—how to beat the managers out of a ticket of admission and then pass it through a crack of the fence for some friend to use.

Every breeder of poultry who takes specimens of his flock to a fair or show expects to win the most premiums; this is one of the rules to which there is no exception. You select the best specimens you have, clean them all up, put them in attractive coups and then step off and look at them from this side, and from the other side, from the front and rear; the head, body, legs, plumage and all are carefully examined, and you say: "Well, if they beat that they will have to have good ones." And you at once decide by a majority of one that you have the best of the breed on earth and will win. Now, if you did not think so, if you knew or thought some other fellow had better birds than yours, would you take your chicks to that fair? Would you go to all the expense and work and loss of time, knowing all the while that you would be defeated? Not much. Hence, I say, when any one takes his birds to a fair he expects to win, and if he does not—if the judge thinks differently from the owner—then there goes up a mighty howl nine times out of ten. But this thing is not always on one side. While I believe the judges are as honest as the exhibitors, both are liable to err, and sometimes to discriminate.

I went to Chicago with the best birds in the United States, in my opinion. When I got to the fat stock show I found strong competition. I carefully looked them all over and found that on old birds I could only win one second, that on hen, because the other fellow had but one entry; on pullets I decided I could get nothing, but that I was entitled to second on pen, first on cockerel (as I had far the best bird in the show), and I summed it all up thus: Second on hen, first on cockerel, second on pen; but the result was second on hen, second on pullet and second on cockerel. On looking at my second prize pullet, where I expected nothing, I found she was disqualified, but kicking is an unwholesome practice.

For some time I thought that the State Fairs would eventually be our principle chicken shows. For the past two years, however, the poultry shows seem to have taken a new lease on life, and have been well patronized.

So far as I know, the Indiana State Poultry Association is the only association of the kind that is directly connected and identified with the State Board of Agriculture, and on this account the Indiana State Poultry Association takes higher rank than most other associations of the kind, and it is our duty to so work as to promote this interest and build up a large and fine display of the best chickens at the Indiana State Fair. Yet, this can not be a one-sided affair; while the members of the Association must do their duty, the State Board must also meet us on the road. While they have done much, and we must give them due credit, they must do a little more. The first duty, however, now lies with us.

The hucksters, or, as they are sometimes called, hippodromes, in the chicken business, have done more to injure the fancy poultry business, than all other things combined. What I mean by huckster or hippodrome, are the fellows who are professional showmen. They make regular pilgrimages or circuits each year, taking in the State fairs where good lists are put out, carrying with them all the known and unpopular varieties of birds; winning a lot of premiums where there is no competition. You will notice in the Indiana State Fair premium list the absence of several standard varieties of birds; I am responsible for that. I did it three years ago to cut out a certain huckster, who, by showing varieties that are not generally shown at fairs, and by having no competition, made big money. To illustrate, a very passable pair of white games can be manufactured in short order, by taking a white Leghorn pullet, with a comb that is thick and stands up straight, and by "dubbing" a cockerel of the same breed. The premiums on the leading varieties were increased and our huckster friend came no more. This same thing happened at a southern State fair. I was present; \$400 was offered in premiums on poultry; one of these traveling showmen came in and took \$325 of the money.

It is the duty of this Association, having, as it virtually has, control of the poultry show at the Indiana State Fair, to prevent all this kind of work. Now, what we want the State Board to do, is, to appropriate money enough to pay premiums on all the standard varieties of fowls, without cutting down the amount now offered on any breed. We, also, want them to pay a fair salary to a competent judge, \$5 a day is not sufficient pay for an expert. We, also, want the scale used in judging poultry at the State Fair. We, also, want the appointing of an Assistant Superintendent, as last year. And last, but not least, we want, and we want them bad, new and attractive coops, and, pretty soon, a new poultry hall.

The poultry department at the Indiana State Fair is the best of any State fair of which I have any knowledge. It attracts more attention than any one department of our fair; but few go away without first looking at the chickens. While I find no fault with the management concerning this department, yet it can be made more attractive and more profitable to exhibitors, visitors and to the State Board. It should be made attractive, by exhibiting the best specimens of the different breeds, by attractive coops, by cleanliness in every corner, plenty of room between coops for visitors to pass around; with here and there some attractive decorations. Looks go a long way toward success. Recommendations and requests for what this

Association thinks best should be made here, and not a committee appointed to look after it, but the Secretary should be instructed by the President and Board of Directors to look after the display of poultry at the Indiana State Fair. He to meet with the State Board when they meet; and, when the premium list is out, our Secretary should, by circulars and letters, communicate with all poultry breeders, setting forth the advantages of this exhibit, that it is under our charge, virtually, and urge a big display. Usually a new member of the Board has been put in charge of the poultry department, and the result has not been satisfactory. Last year we had a new member, but, I am glad to say, Mr. Jones proved to be a very satisfactory and efficient Superintendent, and I only hope we may have him again.

DISCUSSION.

The discussion of Mr. Jenkins' paper brought out many interesting facts, among them being the fact that there is a set of men justly denominated "poultry fair hucksters," who take no interest whatever in improving the stock of poultry throughout the country, but who, every year, a few weeks before the fair, go around among farmers and buy up everything that has a semblance to being a fowl belonging to one of the numerous recognized varieties of poultry, thus starting out on a circus tour all over the country, and at many of the fairs taking away hundreds of dollars. This migratory disgrace to the legitimate exhibition of thoroughbred poultry spreads broadcast his mongrel stock like the infectious virus of small-pox, and all the conscientious poultrymen in America can not undo the evils in five years that he does in one year. He usually carries what he calls a lot of odd varieties, which, in the aggregate, win him many dollars that ought to go to those who are really interested in improving the present stock of poultry.

Mr. Jenkins stated that he had been able to shut out one professional huckster from the State Fair by cutting out a lot of his classes.

Mr. Barker stated that he had met this self-same huckster, and that he was very sore because he had been so shabbily treated by the State Board.

Mr. Jenkins hoped he would remain sore—so sore that he could not get to our fairs this year.

Dr. Robinson stated that the highest quality of stock that he had found anywhere this year at a fair was at Crawfordsville, Ind., and that the superintendent of the poultry department, Ben. S. Myers, refused to allow this self-same huckster to come inside the fair grounds. He thought that the best method of crushing out the huckster was to show good stock against him. He would soon get tired of going to shows where he could win nothing. He knew of a case where two of these hucksters met at a fair in Indiana, and the judge that was expected not putting in an appearance, the two got the consent of the fair association and passed upon their own birds, giving them almost all the premiums.

The following paper was read by I. N. Barker, Thorntown, Ind.:

"BREEDING AND EXHIBITING POULTRY."

Breeding stock from which early chicks are desired to be mated by the last of December or early in January, so that eggs for hatching can be safely depended on by the first of February. Set a few hens in February, if possible, so as to have out several chicks by the last of the month or first of March, as cockerels for the fall fairs should be hatched quite early; it is not so important to have pullets so early, as they develop more rapidly than cockerels. Separate the cockerels from the pullets at about four months old, feed liberally of a variety of food, and keep the chicks clean and in fine condition, exhibit some of them at your county fair, and if you were careful in your matings, you will stand a fair show of winning some of the ribbons as a reward for your intelligent care.

Some breeders refuse to show at the fall fairs, but I think this a mistake, especially where fair managers secure the services of a competent judge. As the fall fairs are where many people first see fine chicks, and first decide to become breeders themselves, and here is where they often purchase their first pure bred poultry, and is the starting point of a successful career as a breeder—hence, I say by all means make as fine a show as possible at your fall fairs—unless your fair managers refuse to secure a competent judge; in that event, of course you will not show, as no reputable breeder will show against a huckster where a competent judge is not employed.

By the way, I would earnestly urge all breeders who have their breeding stock in yards, to provide some way of giving the male bird extra feed, for if fed only in troughs with the hens in yards where he can get nothing to eat, only as it is given him, he will not get a sufficient amount of it to keep up his strength and vitality, unless they are fed so much that the hens will be entirely too fat for their eggs to hatch with any degree of certainty, as hens should never be kept fat in the breeding yard if a good hatch and strong chicks are expected. My plan is to nail a cup to a post or inside of the house just out of reach of the hens, but so the cock can reach up to it and eat grain from it whenever he desires it; he will thus keep in good flesh and strength, otherwise he will often get so poor as to be worthless.

B. T. Pace, of Salem, Indiana, presented the following, on

"POULTRY FOR THE FARM"

There is a general waking up all over our country to the interest of agriculture, owing, no doubt, to the dissemination of agricultural and kindred journals, and our best farmers are seeing and learning that success can better be attained by careful attention to little things, and developing the resources within their reach.

A great many of our best farmers are seeing the expediency of keeping pure-bred fowls on their farms, that their tables may be supplied with fresh eggs and finely flavored meat, as well as a source of profitable income, from the surplus that may be disposed of, which can not be obtained from the ordinary scrub, barn-yard

fowl. The old way of getting a lot of hens and a few cocks of no distinct breed, and letting them roam all over the farm through the summer, and hunt their own living, and roost in trees and on fences in winter, must be abandoned.

How can poultry raising be made profitable to the average farmer? is a question worth careful consideration. Many farmers think raising pure-bred poultry too small a business to attract their attention, but only belongs to the poultry crank fancier. (God bless the poultry crank fancier!) They think it right and well enough to breed pure-bred cattle, horses, sheep and swine; and may we ask why? Because it is a demonstrated fact, no longer questioned, that pure-bred stock brings a larger profit from the same amount of labor and care that is required for the common or scrub stock. And the same holds good with poultry, only to a greater degree. There is no stock on the farm receiving the same care and attention that will pay as large per cent. profit as pure-bred poultry. To demonstrate this fact, we would say to any good farmer, that breeds other pure-bred stock: Procure a flock of pure-bred poultry, build suitable houses and yards for them, give them the same care and attention you do your other stock, (and it won't take one-fifth the time), keep an accurate account of both, and our word for it, you will be surprised at the result being largely in favor of the poultry, and before you are aware of it, you will be a strong advocate of pure-bred poultry. Why? First, because the purer anything is, the better it is; second, because it is more beautiful; and last, because it is much more profitable, as we propose to show by the following figures: If the common scrub fowl weighs from four to six pounds, you think it pretty good weight, and many of them fall far short of that. Now we will take the standard weight of a pure-bred Plymouth Rock cock, which is nine and one-half pounds, and that of the hen, seven and one-half pounds, while in some of the Asiatic varieties, the weight is much greater. Now we have here an average of four pounds each more flesh than the scrub fowl, or forty-eight pounds more meat to the dozen fowls, which, at eight cents a pound, would be \$3.84 in favor of the pure-bred stock, and with no more feed and care than it would require for the common scrubs. And, besides, the pure-bred stock will always command a better price, and more ready sale in the market, on account of the finer appearance.

Again, if it is eggs you are after, then there is still a better reason why you should keep pure bred fowls. The average scrub hen will not lay over five or six dozen eggs per year, while any of the pure-bred, non-setting varieties will lay from ten to sixteen dozen eggs per year, we will say twelve dozen as the average, which gives us anyhow double those laid by the scrub hen. Thus we will show that the eggs from the scrub hen, say six dozen, at an average price of 15 cents a dozen, brings us 90 cents for the entire year's output of eggs. (It is no wonder you say there is no money in poultry while you keep on raising such stock.) Now we will take the twelve dozen eggs from the pure-bred stock and they bring us \$1.80, just double what your scrub did, and no more care nor feed than your scrub should have. This is where we come in and claim that there is money in poultry on the farm, if we keep the right kind, and the difference is yet greater than we have yet stated, for in your pure breeds you get more eggs through the winter, which brings better prices.

We would appeal to every farmer throughout our broad country, to look after these small things at once. Do not put it off! Remember, procrastination is the thief of time. We remember a few years ago, the Niagara Grape Co. were selling their fine pure Niagara grape vines at \$2 each, a small root with only two or three buds. We invested \$2 for one, but wish now it had been \$20 for ten. Most of our neighbors said they were too high, that they would not pay any such price, that they would be cheaper in a few years, etc.; well, that is so, but what is the result? Our vine is a fine bearing vine, bore fully fifty pounds of as fine grapes in 1889 as ever went on any person's table, worth at least twice the cost of the vine. Our neighbors are now buying vines at 50 cents each, yet, while they are waiting three years for their vines to bear, we will be enjoying the fine fruit from ours, and they will look on with watering mouths, besides, in that time, we shall have received twenty times the cost of the vine, while they receive nothing. And that is the case in pure-bred poultry, the sooner you begin it the better off you will be. Your opportunity is now! There are plenty of good poultry breeders throughout our land that can supply you with good pure stock—right here we wish to say that the agricultural interest owes much to the poultry fanciers, those who devote their time and attention to breeding and improving poultry, yet they are too often misunderstood by farmers and others. As is usually the case when people devote their special attention to any one pursuit. The poultry fancier is generally looked upon as an enthusiastic crank, who is of no great benefit to the public good, which is a very great error, and does the poultry breeder great injustice. The great increase in the product of eggs and flesh to-day is due to the enthusiastic poultry fancier, who has looked this wide world over for new varieties, and bred them up in their purity, until to-day we no doubt have all that are worth having.

Again I appeal to the farmers to erect suitable houses, properly located, with nice yards and runs for their poultry, start them with pure-bred poultry, give it a small share of their attention and care, and they will soon become interested in it. It will be the pride of the farm, a source of profit, and a pleasure and a joy forever.

INCUBATORS.

When the subject of incubators came up, Rev. W. Crockett, of Delphi, expressed himself as having lots of faith in them, though as yet he had little to base this faith on. His success was not as flattering as he had expected, though he hoped for better results in the future. He believed the incubator was shortly to be the chief mode of hatching. He had bought a 100-egg hatcher and had used twenty quarts of water in it. Had followed the directions of the manufacturers exactly. In nineteen days the eggs had little life in them; those that were dead he took out of the shell and found that they had been drowned. He reduced the amount of moisture, first twenty per cent., then thirty per cent., then sixty per cent., each time showing a better result, and at last used the least amount of water possible. Wrote a letter to the manufacturer of the incubator and pronounced moisture a fraud. He shortly got a reply that they had just about completed a hatch without moisture, and agreed with him.

Dr. C. A. Robinson was a friend to incubators. Was acquainted with the inventors of the three most worthy hatching machines, namely, the Indiana Hatcher, the Prairie State and the Buckeye. That he knew them all to be honest men who desired nothing if not to give the public value received for every penny they got. That he was somewhat acquainted with these incubators and while they were not perfect they were reliable. He regarded the incubator as the coming hen.

Mr. Barker couldn't see it that way. Like the old kind of religion, the old kind of hatching was good enough for him. He didn't think the incubator could cope with the hen as yet.

Mr. Jenkins remarked, upon the assertion of Mr. Robinson that incubators were a success, that he would like to see one that was a success. He had noticed three efforts to make hatches at the poultry shows of this city and all had been failures. He stated that he would give a special premium to any machine that would come to the Indianapolis show next winter and make a satisfactory hatch. That he had never seen one.

Mr. Hagedorn was a friend to the incubator. He had hatched with both hens and incubators, and while there were more incubator chicks died than those of the hen, yet what lived were stronger and more thrifty.

J. Henry Lee, of Indianapolis, presented a paper entitled:

"POULTRY VS. BEEF."

Statistics are very poor mental food for an audience composed of ladies and gentlemen who perhaps already know more about the poultry industry than I do. But if we were to compare the two great sources of the world's meat supply we would have to set the items down in dollars and cents, pounds and ounces, nutritive value, etc. However, accurate statistics concerning the poultry industry of the United States have never been compiled, and a reasonable comparison of the two products is, therefore, scarcely possible. It is true, in the recent report of the Government's Secretary of Agriculture, the statement is made that "the poultry products of the United States had a farm value of at least \$200,000,000 the past year," and "the importation of eggs was worth nearly \$2,500,000." While this statement bears on its face evidences of guess-work, it also seems to take no account of the poultry meat grown for home consumption in almost every back yard, and of which no doubt no very accurate estimate can ever be made; and it is in nowise an acceptable estimate of the value of the (market and thoroughbred) poultry product of the country. In view of the fact that the census of 1880 (ten years ago) gave the poultry product a valuation of \$186,000,000, Secretary Rusk's estimate is certainly far too low for even the farm products, because the country has not only grown greatly in population (and, by the way, the bulk of growth is from immigration of European people who bring with them a more thorough education as to the economic value of poultry products, and consequently will raise a few fowls even about the dooryard of a tenement house), but our people have come, more and more each year, to a realization of its importance in their every-day life. In this connection some figures are suggestive. The imports of eggs in 1872 were

6,000,000 dozen; in 1882, 13,000,000 dozen; in 1887, 14,000,000 dozen, and last year about 16,000,000 dozen. Thus we see that the increase of imports is not in proportion to the increase in population, and this, taken in connection with the fact that the use of the product is increasing in greater proportion, is pretty good evidence that the native hen is getting in her work to some purpose in these States.

To strike a mean of the many estimates obtainable on the subject, I should place the total value of the poultry product (including market and thoroughbred fowls and their eggs) as not far from \$600,000,000—stupendous amount. But it was estimated more than five years ago, by high authorities, at \$560,000,000, and so, probably, \$600,000,000 is now too low. According to statistics produced by Captain White, the poultry product of France, where the grower labors under many disadvantages unheard of here, was nearly \$200,000,000, some eight years ago; and France is, we must remember, so small that our State of Texas would contain it, with room for all of New England, except Connecticut. A proof, by the way, that the industry in our country is by no means overdone, if any proof were needed, on top of the enormous annual importations of eggs.

It is considered a small business by the outside public, and truly it is business of small things. We Americans who do business only in spread-eagle fashion are therefore too liable to overlook its importance. An egg is a small thing, but when we have authentic instances, without number, of hens producing enough of them during a year to double or treble her own value and cost together, we can form some idea of her importance. A test case is still fresh in my mind, where six thoroughbred Brown Leghorns produced an average of a fraction over \$2.33 worth of eggs (market price) in nine months; and in the business of rearing broilers, there are cases on record of a return of fifty cents and more for each single cent of cost of production.

But I haven't said anything about beef as yet. Why? Because this is an audience of "chicken cranks," and I am a chicken crank myself, therefore I am expected to paint *our* side of the subject clear up to the skies. However, I have presented only reasonable and well authenticated statements, I think.

The average value of beef cattle in the United States is about \$20; the average value of market poultry is certainly not less than 50 cents. Hence, forty head of poultry is equal to one beef in money value. The average selling price of the meat in market, pound for pound, is about the same, or if there is any difference it is in favor of poultry meat. When it comes to the actual cost of keeping the difference is greatly in favor of poultry. Mr. Babcock estimates that a daily ration for one cow will keep one hundred hens; and if we include in our view beef cattle on the one hand, and all variety of fowls that go to make up what are called poultry on the market (*i. e.* turkeys, chickens, ducks, geese, etc.) on the other, Mr. Babcock's estimate will still be a well balanced one, I think. But the selling price of one hundred head of poultry would be \$50, as against \$20 for one beef. However, the labor of preparing the dressed meat is somewhat greater in the case of poultry.

No chemical analysis is needed to prove the nutritive value of poultry flesh over that of beef. Our grandmothers knew it from long experience, and any

invalid will bear witness to its more relishable quality. Then, along about Thanksgiving time beef is buried out of sight under a mountain of turkey and chicken flesh.

To sum up a knowledge of the facts:

1. That the growth of flesh is quicker.
2. That its production is cheaper.
3. That its nutritive value is greater.
4. That it can be produced in confined quarters, where beef can not.

All establish the importance of the poultry industry as regards the food supply of the country.

WOMEN AS POULTRY BREEDERS.

The subject of "Women as Poultry Breeders" being next on the programme, Mr. Pierce stated that for want of time he had been unable to prepare an address. He would be glad to hear from some of the ladies present. He noticed that Mrs. W. R. Clore, of Trafalgar, was present, and he should be pleased to hear from her.

Mrs. Clore not being a member of the Association, and withal very modest, hesitated to give her experience.

Mr. Pierce thought the women a very important factor in the matter of poultry raising. That Mr. Barker had said that the male in the pen was so gallant that he would allow his mate to eat all the food while he stood around and starved himself. This could hardly be said of their owners. The latter were perfectly willing to allow the ladies to do the greater part of the work, while he reaps the honor and goes to the shows and has a good time. He thought that a greater recognition should be shown the ladies. There were many more of them attending the shows now than heretofore.

Dr. Robinson freely admitted that when it come to handling chickens his wife is "the best man" of the two. He did not care to be regarded selfish, especially in his family, and he was ready to allow the credit to go where it belongs. He was real proud of the fact that his family took so much interest in his affairs and showed so much willingness to assist him.

Ren. W. Crockett found himself impelled by force of facts to admit the same thing. He was not ashamed of the fact that his family took as much interest in poultry as they do.

The election resulted in the selection of the following officers:

Major Griffin, President, Mauzy, Ind.; E. A. Pierce, Recording Secretary, Indianapolis, Ind.; Ren. W. Crockett, Corresponding Secretary, Delphi, Ind.; D. H. Jenkins, Treasurer, Indianapolis, Ind. Vice-Presidents: Wm. Tobin, Indianapolis; D. Christian, Roanoke; R. Twells, Montmorenci; I. N. Barker, Thorntown; Mrs. W. P. Binford, Westland; Dr. W. J. Owsley, Darlington; Henry Allen, Bloomington; B. N. Pierce, Indianapolis. Executive Committee: John Emerich, Indianapolis; B. T. Pace, Salem; Ben. S. Myers, Crawfordsville. Ex-officio: Major Griffin, Mauzy; Wm. Tobin, Indianapolis; Ren. W. Crockett, Delphi; E. A. Pierce, Indianapolis; D. H. Jenkins, Indianapolis.

LIST OF MEMBERS.

D. H. Jenkins, Indianapolis, Ind.
G. J. Bergener, Indianapolis, Ind.
Walter Elliott, Shelbyville, Ind.
Chas. Styer, Kokomo, Ind.
John Emrich, Indianapolis, Indiana.
B. F. Hill, Indianapolis, Ind.
C. H. Johnson, Rushville, Ind.
Daniel Christian, Roanoke, Ind.
Ren. W. Crockett, Delphi, Ind.
W. H. Hubbard, Indianapolis, Ind.
William Tobin, Indianapolis, Ind.
I. N. Barker, Thorntown, Ind.
Ben. S. Myers, Crawfordsville, Ind.
H. C. G. Bals, Indianapolis, Ind.
W. F. Christian, Roanoke, Ind.
Dr. W. J. Elstun, Indianapolis, Ind.
Edward Woodard, Rushville, Ind.
B. T. Pace, Salem, Ind.
J. W. Foutz, New Castle, Ind.
Sid. Conger, Flat Rock, Ind.
W. P. White, Rushville, Ind.
W. H. Fry, Indianapolis, Ind.
B. N. Pierce, Indianapolis, Ind.
E. A. Pierce, Indianapolis, Ind.
R. Twells, Montmorenci, Ind.
W. M. Johnson, Indianapolis, Ind.
A. Tyner, Greenfield, Ind.
Cy. W. Neal Marion, Ind.
Major Griffin, Mauzy, Ind.
J. H. Lee, Indianapolis, Ind.
Henry Allen, Bloomingdale, Ind.
W. D. Page, Fort Wayne, Ind.
G. A. Stanton, Greenwood, Ind.
A. K. Warren, Lebanon, Ind.
J. F. Kreig, Indianapolis, Ind.
Geo. Drechsel, Indianapolis, Ind.
Mrs. W. P. Binford, Westland, Ind.
W. L. Hagedon, Indianapolis, Ind.
Jno. M. Ross, Liberty, Ind.
Enoch Parr, Harristown, Ind.
Wm. J. Owsley, M. D., Darlington, Ind.
A. E. Meredith, Indianapolis, Ind.

•

POULTRY BREEDERS.

545

•
R. R. Jones, Lafayette, Ind.
James Sarvis, Newmarket, Ind.
J. E. Dougherty, Lotus, Ind.

HONORARY MEMBERS.

W. T. Fenton, Ottumwa, Iowa.
T. F. McGrew, Jr., Springfield, Ohio.
Oren Scotten, Detroit, Mich.

BEE-KEEPERS.

The State Bee-keepers Association met in the lecture room of the State Board of Agriculture, State House, Wednesday, January 15, 1890, at 1:30 P. M., and was called to order by President Collins, of Mattsville.

During the gathering of members the subject of the past season and the present condition of the bees was discussed. Many had obtained no honey and no large crops were reported. A large number got about forty pounds of comb honey per colony spring count, and nearly all of the fortunate ones advised the use of quilts and warm packing above the supers. They claim that during cool nights, such as prevailed last season, bees if not warmly packed leave the sections and cluster about the brood. This allows the newly started combs of the supers to become cold and it is near noon next day before the bees get to work on them. But if packed they remain in the section boxes at work all night. It was stated that with many the use of quilts had been abandoned.

DISCUSSION.

Question. Has any one examined his bees in December or January, this winter to see if the excessive warm weather has started abnormally early brood rearing?

One gentleman had examined and found bees in a normal condition; no brood.

Another member asked if the normal condition of bees was not to be always breeding, and is not the entire cessation a sign of weakness of the colony?

Answer. In a warmer climate they breed continually, and it is natural that they adapt themselves to this rigorous climate with long winters by assuming a semi-dormant condition during early winter.

Bees were reported in fine condition in all parts of the State, except a few colonies which failed to get honey enough to winter.

It was announced that the forms of the certificate of the Central Traffic Association would be strictly followed, and that none would be countersigned by the Secretary, except for members.

President Collins then read his address which brought out some discussion, especially on the subject of our own exhibit at the fair.

PRESIDENT'S ADDRESS.

LADIES AND GENTLEMEN—The study of agriculture during the past ten or twenty years has been of unusual interest, because in it, as in other occupations, the growth of invention has been very rapid and encouraging. The great excitement over the introduction of Italian queens into American apiaries has passed away, and the business has found its legitimate work of furnishing bees and queens and other supplies to the trade, and producing honey for the market.

The honey flow during the past three seasons has been quite discouraging, so much depends upon climatic conditions. We have passed through two years of drouth and one of cold and wet, yet it is noticable that where good management prevailed, the yield was generally remunerative.

Fellow apiarists, did you ever think what the result would be if every circumstance connected with honey production were to be perfect for a few years? I suppose one-third of the apiaries now existing could flood the market with the finest honey, and ruin prices. Yet a second thought is that with this great abundance would come sluggishness and decay. These ever varying conditions constitute a complicated problem, which necessity compels us to solve, and in the solution of which lies the pleasure of pursuit and the enjoyment of attainment.

Allow me to illustrate, all of my neighbor bee-keepers, who kept their hives including surplus cases, warmly packed during the past cool season, secured more honey than those whose colonies were unprotected, and again, those who practiced contraction obtained more honey than those who did not.

At the beginning of '89 Mr. A. I. Root gathered statistics from all parts of the United States, from which we learn that well informed bee-keepers lost about nine per cent. of their colonies last winter, while the less-informed lost 17 per cent.

Later, statistics by Mr. Root, on the yield of honey the past season, show that the cool, wet weather which continued through May, June and July, prevented bees from breeding fast enough to have the necessary strength to secure a large crop, and that excessive rains washed the honey from the flowers, but in spite of all this, the yield was 75 per cent. of a crop, being 50 per cent. better than in 1888.

Statistics show that as far back as 1880, our State had 146,000 colonies and produced 1,097,000 pounds of surplus honey, but the disastrous winter of 1880 and 1881 killed over half of the bees and reduced our surplus to 690,000 pounds, making a difference in the two crops of 466,000 pounds. These are very extreme changes.

The total yield of honey reported in 1887 was 1,624,000 pounds; being 566,000 pounds more than in 1886; average to each colony for 1887, 16.9 pounds. In 1888 the number of colonies increased but the honey yield was reduced to 923,000 pounds by the effect of the dry weather. Pounds to colony in 1888 7.9. Winter of 1886 and 1887 lost 30 per cent. of colony.

I suggest that more attention be given to packing bees for winter and as much for spring as for winter; and that it be advised that bee-keepers be more thoughtful about robbing too close and increasing too fast. Let all colonies be kept strong. Do not the majority of our winter losses come from dysentery and starvation? and have we not all known weak colonies to starve with plenty of honey because so poorly protected that they could not move about on the combs in protracted cold weather.

I wish also to call the attention of the society to the great improvement in surplus arrangements.

The labor of producing fine comb honey and the ease with which it is neatly prepared for market depend very much upon the arrangement of the supers.

Our exhibit at the State fair was creditable although not as large and impressive as becomes our great Hoosier State. The room allotted was not sufficient, which the gentleman in charge of the agricultural exhibit excused by saying that he had no assurance of a larger space being filled. But he showed great willingness to give all necessary room. If a half dozen honey producers would club together and agree to fill a certain space and apply for said space under the above agreement, they will get it.

By all means, if possible, avoid being located in a corner and, if possible, have the aisle wide enough, so that a half dozen who may stop to examine the display may not turn the line of march into some other aisle.

If the crowd can comfortably pass by continuously, the exhibit will attract from it those congenial with the business, and, also, through mere curiosity a great many who have never thought on the subject. This will give us an opportunity to correct many erroneous ideas and statements relative to the business to the benefit of consumer and producer alike.

Your chairman is satisfied that the business of honey production is susceptible of a large popular extension in a small way. That many families especially on farms have at least one member who could readily learn to handle a few colonies so as to supply the household with plenty of honey and with small outlay. Farmers are advised to grow strawberries and other small fruits and why not equally well, if one possess tact, produce our own honey?

Finally, before closing these remarks, allow me to recommend the cultivation of the habit of attending agricultural associations of all kinds. It pays to attend these societies for the social feature alone. One also finds that association with persons of similar tastes and experiences in the same occupation a great source of improvement and encouragement. But allow me to suggest that if you organize a club, do not smother it with formalities or kill it with officers who attend only when exactly convenient.

Before taking my seat I wish to express my thanks for the honor you have conferred in giving to me the chair for the third time and for the kindness you have shown in assisting in making the meetings lively and instructive.

The address was followed by a paper by Geo. C. Thompson of Southport, Ind., on

"THE BEST METHOD OF SECURING COMB HONEY."

I shall not be so presumptuous as to say that mine is the best method of securing comb honey, nor that the method used is original with me, but it is the result of careful study of the methods of others, and adopting them to my surroundings and implements.

An indispensable condition for securing a large crop of comb honey is that every colony worked for comb honey must be strong in bees; by that I mean that the hive, whatever its size, must be full to overflowing with bees. While this may be desirable in working for extracted as well as comb honey, it is indispensable in profitable working for comb honey. A comparatively weak colony may give fair returns of extracted honey, but will not work in sections so as to be profitable.

The hive should be so constructed as to be easy of access in all its parts at all times, and also capable of being contracted or expanded at will, as circumstances may demand, and for this purpose I have not found any thing better than the Langstroth. The surplus cases should be easy of manipulation, so that they may be easily and quickly removed. I have been using a case that covers the whole top of my 10 frame Langstroth hive, holding 32 one pound sections, worked on the tiering-up plan. Where the honey season is short, and the honey comes in in great quantities in a few days, I have no doubt this is the best plan, but for me I have about concluded that it is not the best plan, for the reason that it gives too much empty space on the hive at one time. The chief dependence in my locality for honey is the white clover, and while it yields well, honey comes in much more slowly than it does in other localities where basswood is plenty. Last season one of my best colonies sulked for several days when the others were all busy, because I raised a partly finished case and placed an empty one beneath it. And I am almost persuaded that for me it would be more profitable to use a case with wide frames, each holding 4 one pound sections, with separators, the sections to be removed and replaced with empty ones as fast as filled. This would probably involve extra work, but I think it would also secure more honey for me. It would also save one-half or two-thirds of the surplus cases used in tiering up.

The colonies must not only be strong at the beginning of the season but they must be kept strong, and to this end swarming should be prevented as far as practicable. I doubt if it is desirable to entirely prevent swarming even if it could be done in producing comb honey. The gratification of the swarming impulse seems to greatly increase the vigor of a colony, but after swarms should be prevented, which can be done by what is known as the Theddon method of "hiving the swarm and placing it on the stand of the old colony, placing the surplus case on the swarm, removing the old colony a few inches, turning the entrance away from the new one at an angle of about forty five degrees. As soon as the new colony has its location well marked turn the old colony back parallel with the new one and close to it. Five or six days after swarming, when the working bees of the old colony are mostly in the field, remove the old colony carefully to a new location some distance from the swarm. The bees from the old colony which are in the fields will then return to the old stand and unite with the swarm, and you

have the full working force of the old colony with the swarm, leaving the young bees to take care of the brood." In hiving prime swarms contract the hive to four to six Langstroth frames, depending on the size of the swarm, using in the frames only comb guides of wood or foundation, and let the bees build their own combs, which will be occupied by the queen as fast as built, forcing the bees to store all or most of the honey in the sections. Of course in doing this you must use a queen-excluding honey board, or else you will have the queen making a brood nest of the sections. If, after the white honey season is over, you wish the bees to store the brood nest with fall honey for winter stores, remove the division boards and fill the hive with frames of comb if you have them; if not, frames filled with foundation, and they will generally gather enough fall honey for winter stores, especially if there is a good sized field of buckwheat within easy range. If you desire no increase keep them in the contracted brood nest till the end of the season, compelling them to store their honey in the surplus case, and they will come out at the end of the season with but a small quantity of honey in the brood nest, which may be extracted or put where it will do the most good, and the bees united with other colonies or otherwise disposed of. Some one will ask, what about the use of foundation. Well, so far I have only used it as starters in the sections. It would probably be profitable to fill the sections with foundation if you can get it of such quality as not to injure the eating quality of the honey.

There are other things which enter more or less largely into the problem of the production of comb honey, but as they are on the programme for separate discussion I will only mention them here. The manner of securing workers for the harvest; the prevention of excessive breeding of drones, etc. After we have done all we can there are other conditions, which we can not control, which determine our success or failure. In the early summer of 1888 my bees were strong, but because of drought the preceding year there was but little white clover, and my bees did not gather enough honey for winter stores. Last year there was an abundance of bloom but little honey, because of meteorological conditions.

DISCUSSION.

Much trouble during the past season was expressed on account of bees insisting upon putting honey in the brood chamber, and crowding the queen. One of three results usually follows: 1. The colony may become weak for lack of room for the queen to lay. 2. If the hive be well filled with brood before the honey comes in every part may be so filled as to cause swarming. 3. Much of our finest honey is stored where we don't want it. We want it in the sections. Remedy--see that bulged combs are trimmed to the top bars, and placed not more than five-sixteenths of an inch apart. Put on section boxes when bees first touch up the upper margin of the brood combs with a fringe of new wax, so they will not acquire the habit of storing surplus in the brood chamber. If the season be cool keep the sections warmly packed with clothes or carpets, and if they hesitate to carry honey above, and you are sure they are getting it in quantity, place a few

combs of last year's section honey in the boxes. A strong colony is not so apt to crowd the queen as a weak one. A strong flow of honey is sure to put the bees in the boxes very promptly.

The President appointed Messrs. Chapman, Wilson and Street a committee to nominate officers for the ensuing year.

The Committee on Nomination of Officers reported as follows: For President, Dr. E. H. Collins, of Mattsville; Vice-President, Ora Knowlton, New Brunswick; Secretary, George C. Thompson, Southport; Treasurer, Dr. J. M. Hicks, Indianapolis. The report was adopted, and the nominees elected by acclamation.

Mr. G. H. Hornbuckle, of Glenn's Valley, submitted the following paper on

"PROPAGATION OF HONEY FOR MARKET."

It is a well known fact, when an article is put on the market the first thing to do is to convince the people that it is pure and is what you represent. Honey is no new article, yet we must prove its purity (for we are accused of adulteration). We need to educate the people how honey is produced, and the kind of flowers the best honey is produced from. I find honey on the market that is unfit to use. We should not offer such honey for sale; it is injurious to our honey market. Home market is the very best market. Establish yourself as a honey producer, with undoubted integrity, and never put honey in the hands of commission men; save the per cent. If our people were better educated on the honey question we would find a more ready market.

PREPARATION FOR MARKET.

Of course, the methods of preparation will depend largely on the kind of honey to be sold. Extracted honey has all of the flavor, and is in every way equal, if not superior, to comb. There is but few know it but the bee men. When the people, once know this fact, and that it is not adulterated, then the demand will increase.

We should improve the opportunity in talking on honey and the culture of bees, and explain what we mean by extracted honey. We should make arrangement with newspaper editors and contribute to them and attract the attention of the people so they may become more acquainted with honey and how to take care of it after they have received it. I do not approve of buying honey jars or buckets simply to attract attention; it is unnecessary cost; if so put up they at once doubt the purity of it, but show your honey at home; go to their houses; show what you have for sale. Machine men, book sellers show their goods and make sales. Comb honey needs no comment. Procure it in one pound sections nice, and start and be your own commission man.

The importance of developing home markets was a prominent feature of the discussion of the paper; also, the importance of neat and attractive packages for the honey,

EVENING SESSION.

The society was called to order by the President, and the question "What is the best plan for rearing queens?" was submitted for discussion.

A Member. A few years ago I sold forty odd queens one season. I let the colony become quite strong, then took away the queen, and allowed them to start queen cells, after the cells are sealed, I remove the combs, cut out the cells and fix them in other combs and place them in nuclei or in queenless colonies. I mark these hives, and after the cells hatch I add to the nuclei frames of brood and get pretty strong colonies.

Mr. Russell. I don't remove queen cells till it is nearly time for them to hatch. If there is more than one on a frame I watch, and as soon as one is hatched I take out the frame and remove her. If you arrange to rear queens very early the cells ought not to be divided before the twelfth day, or they may become chilled. But if you leave them any longer some of them might hatch and destroy the rest. I want to tell about an experience I had with a clipped queen. She got out when the colony swarmed, and I thought had left with the bees. The swarm came back, but I did not find the queen till next day. I supposed she was worthless, but when she laid some eggs I put them in another colony to start queen cells, and after twenty days I opened the cell and a drone came out.

Mr. Wilson. Did you notice any difference between the outside of that cell and the others? The drone cell is perfectly smooth, not corrugated like the regular queen cell.

Chair. Mr. Noble, can you give us some new thoughts on queen rearing?

Mr. Noble. I generally make a strong colony queenless, and let them stand some six or eight days, then destroy all queen cells, and give them a frame of fresh eggs from a choice queen by inserting the frame in the brood nest.

Mr. Streeter. I have raised very good queens by Mr. Alley's plan—which Mr. Streeter proceeded to give.

Mr. Russell. This season I tried raising queens on the upper part of a brood frame, on a narrow strip of comb. I had a queen-excluding-zinc separating three frames, and placed them in the upper story, and two frames below. The bees seemed to go up and look after the queens, but somehow I laid it to the bees killing the young queens. It is absolutely necessary that the bees be gathering honey all the time they are rearing these young queens.

Mr. Catterson. I have allowed my bees to supersede their own queens with a few exceptions. I manage for quality, not numbers. I would like to ask why there should be a difference of from three to four days from the time of hatching these queens? Which is the best, the first queen to hatch or the last? I think the largest and longest queen cells are the best. If a comb of brood in all stages is inserted into a hive the bees may use larvæ three days old, and those just hatching for queens. Those just hatching may get the advantage of the rich, royal jelly three days earlier in their development than those three days old. Which is the best? We ought to notice these things carefully.

Mr. Wilson. If a frame of eggs of one day's laying be placed in a strong colony do they all hatch at once? My experience is that they do within twenty-four hours, and I will give an experiment. Last year in my queenery I inserted a frame of eggs in a hive. On the sixteenth day I held it in my hand and nine queens hatched out while holding it. There is always some royal jelly left in the bottom of the queen cell.

Mr. Knowlton. If a queen cell does not hatch in eighteen days I would not give much for it. They usually hatch in fifteen to sixteen days. I once had a cell to hatch in thirteen days.

Mr. Geo. P. Wilson followed with a paper on

"SPRING MANAGEMENT."

As my subject is Spring Management, you will perhaps think it strange that I refer to fall and winter work. We can no more make a success of bee culture in spring without proper preparation for spring work than the child can read without learning its letters or the farmer can cultivate his crops before preparing the soil or planting the seed. The work would be an utter failure on the part of the farmer to till the soil and never plant the seed. So in spring management of bees; we must begin our work early in the fall.

The most important thing in the autumn is strong, healthy colonies of young bees and a good young prolific queen, and plenty of stores to carry them safely through the rigors of winter and early spring. In order to have it thus several things must be looked after. If there is but little or no honey to be gathered early in fall, feeding slowly must be resorted to in order to keep up breeding, for when the bees cease to store honey the mother bee, or queen, ceases to lay eggs. Pure honey is the best stimulant for this purpose. This should all be done early, say by the 10th of September. If wintered on the summer stands see that they are warmly packed for winter. The best packing will probably be discussed during the deliberations of this convention.

Don't disturb the bees any more than can not possibly be avoided during the winter, as this will certainly cause loss and make the colonies weaker. Now, as we have done all we can do to make the little workers comfortable for the winter we will let them rest until spring. When the bees first begin to gather pollen in the spring then begin to prepare for vigorous work. See that nothing is left undone that will be any help to them, for we can greatly aid them in their work if we do the right thing at the right time.

First examine each colony and find out their condition, do this some warm day so as not to chill the brood, for if the conditions are good, brood rearing will have commenced. Be very careful to note the condition of the queen, that she looks healthy and vigorous. It frequently happens that the queen perishes during the winter leaving the colony queenless, in such a case prompt measures must be taken or the whole colony is lost.

I am not much in favor of doubling up, but sometimes it may be necessary in order to save the bees, if I have a queenless colony and a weak one with a queen,

sometimes I would put them together, but if I can get early fertilized queens, I never double up. In order to get queens early in the spring I take a frame of comb with a good sized piece of drone comb in it, and insert it in the middle of the brood nest of a good, strong colony, by this means I have had drones fly in April. Then as early as practicable remove the queen from a good working colony, and you will soon have plenty of young queens and drones.

Now by this means there is but little use of doubling up as you can get queens early for all queenless colonies. Now while I am raising my queens I help the queenless colonies by occasionally taking a frame of brood from some strong colony and put in the weak or queenless ones.

The strong one will not miss the help, and the others will be greatly helped. As to stimulative feeding, I strongly advocate it. We can feed almost anything in the spring without injury; feed but little at a time, and feed often—say once a day for some time. The feed may be put in the upper story of the hive. I have found nothing as good to feed in as a honey comb, pour the syrup on the comb, and shake lightly and it will settle in the cells. The bees will find it quicker on comb than any where else.

The great secret of a good yield of honey I have found to be strength of colonies, and do the right thing at the right time; and, I might add, be sure you have no lazy bees in the apiary. If you have such colonies behind the queen and give them another, for a lazy bee don't like work any better than a lazy man, and will almost starve rather than work.

In conclusion I will say, always rear your queens from an industrious colony, one of the best honey gatherers in the apiary, as there is a great difference in breeds. I have one colony that gave me the past season eighty pounds of comb and seventy-five pounds of extracted honey; spring count, and another nothing.

The discussion following covered substantially the same ground contained in the paper.

Ora Knowlton then read a paper on

"MAKING COLONIES STRONG FOR THE HARVEST."

To handle bees successfully we must handle them intelligently. The casual observer knows that some colonies dwindle more in spring than others; that some gather more honey than others, and that some time in the year is called swarming season. But the intelligent beekeeper searches out the causes producing these inequalities, and can tell with as much precision the approach of swarming as the casual observer can after it is past, and thereby check or stimulate the same as best serves his interests.

The bee has a high degree of instinct raised nearly to the degree of intellect. Hence she, in her cunning, performs some deeds where it looks like reason stands at the helm. While she is endowed with energy and perseverance she may be discouraged. While with proper stimulus as an incentive to action she is very prolific, soon filling her hive to overflowing, everything denoting joy and enthusiasm. With scarcity of food, damp and chilled apartments, and unfavorable surroundings in general she is discouraged and become stupid, aye, sluggish, eking out a

mere existence. When her stores become scanty and nothing coming in she stops brood rearing, or at most rears brood sparingly. There is, if my observations are correct, but one exception to this rule, and that is when the colony is becoming so weak that there is danger of perishing for the lack of sufficient bees to keep up the necessary heat in the hive.

With these prefatory remarks we think that we can proceed to the discussion of the question before us in an intelligent manner. The honey harvest in this locality of real value begins about the 10th of June and lasts 10 to 20 days, hence the importance of preparing to gather all that can be during this short period. Nearly all the bees that pass through winter perish before the first of June, and even of those reared in January and February most all disappear in gathering spring supplies. Hence, we must depend on bees reared after that time to gather the surplus honey.

When the harvest begins we want a colony forty to fifty thousand strong, without which we need not expect a bountiful return of surplus honey. From the time the egg is deposited until the bee is prepared to enter the field to participate in the harvest, requires at least thirty-one days. This brings us back to May 10, when our work should be done, so far as relates to preparing for the harvest. But if not prepared by this time we may stimulate brood rearing ten days longer and then stop, lest we induce swarming, the very thing we wish to avoid. It is estimated that under the most favorable circumstances the queen will deposit from two to three thousand eggs per day, but this has reference to the most prolific queens. Ordinarily, they do not deposit near that number. Besides, for the first twenty-one days of brood rearing in the spring they deposit eggs sparingly, especially if the colony emerges forth from winter in a weak condition. Then we should begin early in March to prepare the colonies, and have them strong and fully prepared for the honey harvest. First clean the hives well, take out all frames not actually needed, closing up with division-boards, keeping bees clustered. Keep winter packing on as blankets, mats, etc., until the cold rain and winds of spring have passed. Guarding specially against dampness in hives, and cold winds blowing directly into the entrance.

As the bees increase move back division boards, inserting other frames as required. We are now ready to prepare our food. Take two parts water and three parts granulated sugar (by measure), bring to a boil and let cool, when it is ready for use, or better feed when at a temperature of 80° or 90°. If bees have ample feed in store one or two gills per day will be sufficient to stimulate brood rearing in a colony, but feed them every day at a fixed time in the day, and not more than they will consume. If feed in hive is scarce, it will be necessary to feed more than they consume, so that they will store some for future use, for they are wise enough to look after stores on hand and supplies coming in, and consider whether it is sufficient to rear young bees and supply their own wants. If there is sufficient flow of honey from willows, maples or fruit bloom to supply their wants, stop feeding, but watch closely and begin again as soon as it checks. When they become crowded in brood nest insert frames above, as required. I think of all the varied ways of feeding, that of feeding over the brood nest, in some convenient feeder, is far the best, as we incite robbing less and disturb the colony least of all ways.

DISCUSSION.

Mr. Russell. I have tried stimulating by feeding a pint of thin syrup every morning to a few colonies and not feeding others, and by the 10th of June I could see no difference between them. How was the stimulating food prepared?

Mr. Knowlton. I used two parts sugar to one of water.

Mr. Russell. I use half and half. A neighbor of mine wintered eight colonies of bees on sorghum, and I never saw stronger colonies. I thought that was pretty good for sorghum.

Mr. Joseph Myers. I never double up early in the spring, but at the beginning of the honey harvest I put two or three together, and they are strong enough to gather honey freely.

Chair. Do you stimulate?

Mr. Myers. I do. I think it very proper. I keep my bees in a shed.

Mr. Thompson. You should keep your bees warm. When cool they can not work wax, but keep them warm and they will work.

Mr. Russell. I do not contract the bees in the spring to warm up the hive least, it should be buried up in packing. So they will not warm up every bright day and come out of the hive, we can cover them two feet deep in corn fodder.

Mr. Knowlton. If we pack too much the bees are liable to fly out in the spring, when it is removed and get chilled. I have noticed that if you leave colony uncovered the bees will make a close cluster and will not break cluster when it is cold to feed. But if protected enough they will remain scattered about the hive all the time. Now my method of packing is something like this: I usually winter bees out doors; place 7 or 8 colonies side by side, leaving 6 or 8 inches between them, then pack about the hives with straw or chaff, leaving the front exposed to the sun. In the spring it is better if you contract to 4 or 5 frames, just what the bees cover well and keep them warm above. I have generally from 30 to 40 colonies and have had 50. I clean out the hive, removing all dead bees, etc., leave the packing on till I need the upper story for surplus or till they begin to swarm. There is one more point in the spring management of bees. Encourage the idea of going over them in the spring; clean the hive, clip the queen's wing and if they need it, feed them. Put crushed oats in their reach and see how they like it. I think it is better than a feed of sugar, they need it in the place of pollen, crushed oats or rye flour. I always feed these for several days before pollen comes freely in the flora. But the clipping of the queen's wing is a very important thing, she is easily found now. But if you wait till later bees will be so numerous as to run all over the combs and you can't easily find her. I think if the colony is strong, we might spread the brood-nest and put an empty comb in the middle of it.

Mr. ———. I do not think bees need any stimulant at all. I always find time to go through the hives in the spring, and see that they have stores. If I do not have a hive strong with bees by the last of May, they never do me any good. I have had them strong as early as the 1st of May, without any stimulating food at all.

Mr. Thompson. I had a colony which built across about four frames, and I simply let them go. That colony has been one of my best.

Mr. Russell. We should, however, as a rule, examine every comb for drone comb, and cut it out. The drone is the consumer, and we do not need to save much drone comb, except in a choice hive or two. Remove the drone comb, stimulate the colony, keep them warm. Then you will get a hive full of working bees, which will be a great pleasure to you and give you a rich harvest. When I get very strong colonies then I get the nicest honey. I keep a card or memorandum of every colony, and when opening a hive, if I am perplexed to know its condition, I take out this little paper and there is every part of the hive right before me. I know every queen in my apairy.

Chair. We have a question like this: What do you do with one of the queens when you double up two colonies?

Mr. — If I had any choice of queens I would kill the poorest, if not, I would pay no attention to the queens, but mix the colonies by alternate frames and sprinkle them with sweetened water or honey.

Mr. Streeter. I have sprinkled with peppermint water, and then shake the bees together in front of a new hive. While questions are in order I wish to ask which is cheaper, comb honey at twenty cents or extracted at ten cents? I think extracted at ten cents, and it is also more profitable to raise extracted at ten cents, it is also more profitable to buy the extracted honey at even twenty cents for you do not buy wood or comb.

Mr. Russell. I work for both, we can often get more than twenty cents for comb honey in this market, I had some at the State Fair that I got forty cents for.

Mr. Catterson. In raising comb honey I notice this, that in most all pound sections there is less than a pound. Bees, naturally do not make much comb unless there is abundance of honey. The comb ready made is a great help to me in securing honey. If there is no waste in simply filling combs then extracted honey is the cheapest. I have, for a few years past, been selling extracted honey and it is quite profitable. I sold some comb honey at seven cents and extracted honey at twenty cents. I think that comb honey at twenty cents is much more profitable than extracted honey at ten cents; by using very thin foundation to start bees straight, each comb will cost but little.

Mr. Hicks. The cost of buying their foundation and the time lost in putting sections together, and placing the foundation, of getting bees to work in the sections, and of taking off and cleaning and running risk of all damages is a great deal more trouble than in working for extracted honey. Generally we can go right along with extracting every day. Bees can make from eight to ten pounds of honey as easily as one pound of comb, and again it is more convenient to market.

Mr. ———. There is always in the honey season a large number of young bees who build comb and nurse larvæ, and do not fly for five days; their work costs us nothing and cheapens comb honey.

Question. *Mr. ———.* What is the best remedy for what is called the nameless disease?

Mr. Russell. There are different causes of the nameless disease. I think superannuated old queens have something to do with it; the bees will tremble and fly and fall and tremble and die. Take the combs all out and shake the bees in front

and four feet from the hive, then sprinkle with brine, the well bees will return to the hive, but the sick will not. I never knew a good sprinkling to fail.

Mr. Osborne. Last year several hives were affected and I gave them a new queen and the disease disappeared. The bees look like they had scabs all over them. I do not try to cure sick bees, but brine is a great cleanser.

CONTRACTION FOR COMB HONEY.

Mr. Hicks. I have noticed that sections are often not well filled out and thus don't weigh one pound. I use small pieces of comb to bait the bees into sections, place it immediately over the brood-nest. It requires much warmth to make comb. I think comb honey, as a rule, has a most desirable and ready market. Where honey has not been introduced in sections there may be some trouble in selling section honey. They want chunk honey.

Mr. Streeter. It is not worth while to contract the brood-chamber to force a very weak colony into the sections.

Mr. Myers. I tried contraction, but did not meet with success. I did not know whether we should remove the queen or not. If you leave space below, the bees will put honey where we don't want it.

Chair. I do not remove the queen. I leave her there to keep up the strength of the colony. If one keeps the boxes warm by packing, in a cool season, the bees work more readily above.

Mr. Knowlton. We can not avoid swarming if we contract the brood chamber to produce comb honey. I find as far as I experimented in contraction, that the hatching bees will fill the small brood-chamber to overflowing with brood, and want to swarm. I want to scatter the brood so as to break up the idea of swarming. If once you get the bees to like the section boxes, and give them plenty of room above, they will give up all idea of swarming. I think my failure has been that I have not contracted the brood-chamber till after my bees got the swarming fever. When a colony swarms I place the swarm into a new hive with frames of foundation or with starters, and put the section boxes of the parent colony on this new hive. This forces the bees to unload their honey sacks immediately in the super. When your bees get to swarming, you do not usually get much comb honey.

Then followed a paper by R. S. Russell, of Zionsville, Ind., on

"THE DRONE AND HIS INFLUENCE."

This is, perhaps, one of the most difficult problems for the bee-keeper to solve, consequently is the least understood. It seems that the bee was created on the fifth day of the creation after his kind—perhaps the drones first, and the females for helpmates, as all will agree that it would not be well for the drone to be alone if the fertilization of the flowers or the gathering of nectar was the mission, as this requires labor. But as the drone is uncompromisingly opposed to manual labor of any kind, he has created more astonishment than all the bees of the hive. As to why so worthless an insect should have been placed among such industrious ones

to consume their hard-earned stores without remuneration, yet more astonishing is the fact of his having existed in a domesticated state in the possession of the greatest and wisest nations of the earth for more than 2,000 years, without even his sire having been discovered, the most popular superstition of all those ages being that they were the mothers of the working bees, and that the entire colony were controlled and directed by the large bee on the throne, supposed to be a King as well as the father of the colony. And, how strange! The simplest facts were a mystery up to ninety years ago, when Francis Huber (I believe a blind man) arose and declared the true nature of the three classes of bees found in the hive, and to the astonishment of the world that the drone was the father of them all. And, how strange, that after bearing the undisputed title of father of our beautiful and most useful little honey bees for near one hundred years, that he is still snubbed by such masses of ignorant people, as the lazy, idle, useless drone. But he has come to stay, and will, no doubt, in a few thousand years, outlive all the falsehoods told on him, and will be treated with that due respect merited. His usefulness and influence on the improvement of our bee is not yet well understood, and as usual, many wise doctors disagree. By observation we find the colony to be composed entirely of specialists, each class being experts in a certain class of labor, while wholly incompetent in others. For example, the Queen is an expert egg layer. This done and she goes gossiping with her friends, and is, to all appearance, as idle and worthless as the drone, with no inclination whatever to render assistance to her neighbors, and in fact paying no attention whatever to the affairs of others. Next class to notice is a large executive committee of bees. Their duties are to take immediate charge of the eggs laid by the Queen, and superintend the entire business of the hive. They are provided with a large police force, and the entire populace are under their command, not even the Queen or drones being excepted. This class gathers no honey, but are at home at all hours tending to their own class of labor. Their lives are much longer than the honey gatherer. Then come comb-builders, water-carriers, pollen-gatherers and honey-gatherers. The last named outnumber all the rest ten to one, and will not sting except as a last resort, or to save life. They pay no attention to the defense of the hive, and are as idle as the drone when there is no honey to gather. Each class seem to have but one object in their short life, and but one distinct profession, and are absolutely dumb and incompetent to perform other kinds of labor.

Now, if my conclusions are true, is it not the most logical conclusion that each class of laborers receive their one peculiar instinct, not so much by inheritance from father or mother, as by the vigilant determination of the executive when the egg is laid. If a queen is required, a large cell is formed and the egg selected for the purpose and with different food and different management, and behold, out comes a bee much larger and entirely different from her sisters in every respect, and wholly adapted to an entirely different class of work, with a perfect knowledge of her life duty the moment she drops from the cell, and may have thousands of eggs laid by the time her sisters hatch. If a comb-builder has been designed, her apprenticeship is finished when she emerges from the cell; and so soon as she passes an examination by the judges, if all right, she is allowed to mount the combs and

begin work. Or, if a honey or pollen-gatherer, she is led to the door, her wings carefully examined, after which she immediately makes a dash to the field in search of honey, or pollen, or water, as her instinct leads. But the scientist has made the discovery that some bees have much longer tongues than others. This, no doubt, is true in any colony, as the true honey-gatherer must have a tongue of sufficient length to reach the nectar at the bottom of the flowers, while with the other members of the colony long tongues would not be required and might prove wholly useless and detrimental to their business. Hence, reasoning from nature's laws, without the microscope, we conclude that the queen, drone, comb-builders, pollen-gatherers, water-carriers, executives and police sentinels have small, short tongues, only of sufficient length and size to partake their own food after it has been delivered to them and refined; yet powerfully developed in other points relating to their profession. The queen, instead of a long tongue, is provided with a much longer body with all the paraphernalia required for a speedy egg layer, and, like the honey-gatherer, is not inclined to sting or defend the home. The pollen gatherer, instead of a long tongue, has powerful clutches or pollen baskets on the legs, just right for her business. Comb-builders require strong mandibles for masticating and reducing the wax to the proper consistency for making the combs, but the long dagger-shaped tongue of the honey gatherer would, perhaps, entirely unfit them for their profession. Water-carriers require strong muscles, large wings and water-tanks, but long tongues are not needed. And now, as for the sentinel and police force, they perform no labor, but are true born soldiers, and are ready at any instant for duty, being always in the vicinity of the hive and on the watch for intruders. I can not state positively as to the length of their tongues, but, judging from the effectiveness of their stings, I would say they are at least one-half longer than those of her sisters. From the foregoing it is easily seen why there is no confusion among the inmates of the colony and why the work goes on so smoothly and all together. But I am asked what influence the drone has in importing and handing down those fine working qualities to his children and their vastly different characteristics.

My answer is none whatever, for the very simple reason that he does not possess them, and can not impart qualities he does not possess; but the golden rule of the animal creation is "*like begets like*," will it not hold good in this greatest and most intelligent insect family of specialists? Now, let's see. The drone and queen are a class of specialists, whose only object is to produce the necessary amount of eggs, properly fertilized to produce types of themselves with only some characteristics. But this done their labor ceases and they are in line with the rule thus far and every egg, if not mistreated or the natural conditions immediately changed, would produce drones and queens of precisely the same stamp and characteristics; but the eggs pass at once into the hands of executives and nurses, who have already prepared all the combs with cells much too small for the development of queens, with only a limited amount of drone cells proper size. The drone or unfertilized eggs being raised in their natural way produce perfect drones after the type of their mother. The female egg containing the character of both father and mother and also in a cell much too small for its full development is a fit subject for the wonderful phenomenon that will soon take place. The brood chamber is raised to

high temperature, the eggs carefully guarded and hovered by countless thousands of foster nurses constantly pouring into their mouths the very essence of their own natures, and by every known means discouraging their former instinct. They are squeezed in the small cell; they are starved; they are steamed; they are sweat out; they are dosed with powerful alteratives until the proper stage has been reached when they are capped air tight and allowed to absorb and dry out, and become permanent types of the true workers of the hive with every characteristic of their foster mothers when they drop from the cell; but not so with the drone. He may be laid in a worker cell and fed all the alteratives, or drawn out for a queen, and may even be produced by his foster mother, or a fertilized or unfertilized queen he still remains inflexible with all his original instinct and fully competent to perform the duties of a drone, yet, fortunately some of his fine qualities are transmissible: 1. His color. 2. His size. 3. His gentle disposition. 4. His long wings. 5. His power. 6. His voice. 7. His smell, sight and hearing, and constitutional vigor. Many thanks for small favors. Lack of time compels me to close in the middle of this large and important field.

Mr. Russell's paper was freely discussed, some agreeing with the writer, others as decidedly disagreeing with his theory of the economy of the hive.

The President. The drone is peculiar in that he has no father.

Secretary. But he has a grandfather.

Dr. J. M. Hicks, of Indianapolis, read the following on extracted honey:

"EXTRACTED HONEY, AND WHAT IS IT?"

Honey is the pure nectar as secreted in the various blooming plants and shrubs of nature's fields, as well as our gardens and orchards, all produce more or less honey in its purity. While we, as Bee keepers, do not have, nor do we possess any other mode for gathering and storing this, the best and most precious of all sweets, only through and by the industry of the honey bees. After which it falls to our lot, in order to make the best results and keep our honey pure and useful for the many purposes it is now used, we extract it from the combs, and return them (the combs) back to the bees for refilling, thus retaining the honey in its purity. By this improved method you will at once discover we have honey free from any wax or comb, also free from any taint or insipid taste that is always found in all strained honey when procured by the old process of breaking up and pressing out the honey from the combs, which have more or less farina (or beebread as it is usually called). It is a well known fact that honey has a peculiar acid or quality, that when it comes in contact with the beebread it will dissolve, and thus in many instances spoils the true taste and flavor of the honey, as well as to render it not so good for medicinal uses.

In many parts of the country we find the people believe and think that extracted and strained honey is the one and same thing, but as before stated, there is a wide and a material difference as regards the true character and purity of extracted and strained honey. The former being a perfectly pure article taken from the combs, just as pure as the bees can possibly gather and store it in the combs,

that, too, without the least taint or admixture of any foreign substance when extracted as we now do with care, even to such a degree of certainty that the practical bee-keeper can keep each class or kinds of his honey crop separated and canned so he may make his sales and deliver the same with as much certainty as a farmer can in delivering his white or yellow corn, or his timothy and clover hay, to his customers. Not only so, but it has been found that pure extracted honey is by far more healthful as a diet than comb honey, and by far superior as a sweet than much of the sugars now offered on the markets. Extracted honey to-day stands as a sweet, without a rival in its many uses, both medicinal and other purposes, it is fitted to the taste of the epicure, and never fails to meet and please the most fastidious as a food or delicacy.

We think and believe that the time is fast coming when pure extracted honey will enter more largely into the many uses of the household, in preparing many of the delicacies of the same. There is no one who controls a rod of mother earth but could keep a few hives of bees and have all the extracted honey they could use, that, too, at a very small expense, besides some to spare to those not so favorably situated. It is a commodity as a sweet, suited to the rich and poor alike, and equally as useful to the high and low, and fine enough to set upon a King's table.

DISCUSSION.

Mr. ———. I want to take exceptions to the very first sentence, that honey is the true nectar of the flowers. Sorghum is not the true juice of the plant, but must be refined. The sorghum is in the plant, the honey is in the plant and must be gotten by the bee and purified.

Mr. Knowlton. I believe Mr. Hicks admitted that there was an acid in the honey which has a curative effect. The honey comes in contact with farina and dissolves more or less of it. But the honey is the pure nectar found in the cells of the flower. The bee evaporates moisture and rejects the foreign bodies.

The Chair asked if any present had been annoyed with a little black bee robbing the apiary—a bee smaller and differing from the German black bee.

On the question concerning the little black bee the following paper, by Jesse Cox, of Westfield, was read:

"THE LITTLE BLACK BEES."

By request I'll give my experience the past season with them. I had a stand that lost their Queen early in the season. I put a frame of brood in the hive, with a Queen cell capped over, and they hatched her out all right. In a few days I opened the hive but found no Queen in it; repeated the same thing over with the same result; have the same hive without any Queen yet. I also put a late buckwheat swarm on same foundation for a neighbor of mine. They had a nice Queen when I fixed them. In a few weeks they had some brood, both bees and drones. The little black bees commenced to rob them, and in a short time they had no honey and they died. I examined them. They had no Queen. I am of the

opinion the little black bees destroyed the Queens in both hives. They have bothered me more the past season than I ever was before. It seems as if they are determined to take my bees. I have almost come to the conclusion that the black bees raise their brood in the hives with the rest of the bees. Now for the question, does the Association think the black bees will destroy the Queens, and do they raise their brood in the hive with the other bees?

Mr. Streeter. I have noticed the little black bee and I think it is our American black bee. They seem to destroy the young bees of the hive that are almost ready to emerge from the cell, and the only way of saving our bees is to kill the black bees, and the best way is simply to destroy the young larvæ. The bees do not fight these black bees. This bee may be what is called the cuckoo bee. I have known the cuckoo bee to lay its eggs in the nest of the bumble bee, and, when they were hatched, they would fly in and out with the rest of the bees. This bee is slick and black, and is, in appearance, very nearly like the old robber bee.

Mr. Catterson. I have inquired of various bee-keepers and have not heard of them in any other place than north of Indianapolis. Trouble seems to be mostly along White River.

Mr. Russell. There was a nest of woods bees commenced on my bees and I could not stop them. They have their nest in an old log, and I think I can capture them.

Mr. Hicks. Last August while attending the Hamilton County Bee-Keepers' Association my attention was called to certain black bees.

Mr. Russell. I do not think it is the honey bee, but a regular set of thieves and robbers, and I am satisfied they are not as a rule the regular bee.

Mr. Hicks. They have got into this country by importation. I have never seen any of them at Battle Ground, and I just left there this spring. The body seems to be perfectly round, rather lengthy and hard, and you will know them surely. I have seen Italian bees sting them and drag them from the hive, and Mr. Black Bee will fly off not hurt at all.

Chair. We have had much trouble with this bee in Hamilton County, and I have sent probably seventy specimens in all to different parties. Professor Cook suggests that they are possibly the cuckoo bee that lays its egg in comb built by other bees and allows the foster mother to rear the young, just as the cuckoo bird lays its eggs in the nest of blackbirds and never cares for them.

A letter was then read from Mrs. Wyckliff Mason, announcing the death of her husband, and the following resolution was unanimously adopted:

WHEREAS, The success, pleasure and profit of the present session of the Indiana State Bee-Keepers' Society is enhanced by favors extended and assistance received from various sources, therefore

Resolved, That the thanks of this society is due, hereby tendered the various railroads and hotels that have accommodated our members at reduced rates, and to representatives of the press for their report of the proceedings of the society.

WHEREAS, We have learned with deep regret, of the recent death of our esteemed co-worker and fellow apiarist Wickliff Mason,

Resolved, That we are deeply sensible of his valuable services and good example as a representative bee-keeper, always found on the side of progress, and that we do hereby extend our sincere sympathy to his beloved and intelligent family.

EXHIBITS.

1. Missouri honey.
2. Extracted honey about twenty-five years old.
3. Alsike clover honey extracted twenty-five years ago.
4. New honey made this year from raspberry and white clover.
5. Sample four or five years old, made from white clover.
6. Extracted honey in candied form.
7. Honey vinegar about six weeks old, and is far superior to cider vinegar, it was made of pure honey and rain water.

The above specimens were exhibited by J. M. Hicks, of Indianapolis. There were also several honey plants exhibited.

It was stated that there was no such thing as honey spoiling if kept in a pure atmosphere so it can not absorb noxious vapors. If you will bring honey to the boiling point it will never granulate.

Adjourned *sine die*.

STATE FISH AND GAME CONVENTION.

The State Fish and Game Association met and organized in the lecture room of the State Board of Agriculture, December 19, 1889, and was called to order by State Fish Commissioner Dennis. Jesse H. Blair was chosen Secretary.

The Chairman. I took the responsibility of calling this meeting for the purpose of getting the leading fish and game men together in order that they might have an opportunity for consultation and hearing each other's suggestions, and determining upon some general plan by which they could carry forward the object we have in view, that is, the protection of our fish and game. That is all the preliminary statement I have to make.

Mr. Applegate will read the proceedings of the informal committee meeting held last night, at which the topics of discussion were determined upon.

Mr. Applegate. We have agreed upon the following topics for discussion :

1. The best method of effecting a State organization.
2. The best method of forming local societies.
3. The best method of securing the influence of the agricultural societies.
4. The best method of securing the influence of the press.
5. The best method to create a sentiment in favor of fish and game protection.
6. The best method of securing the enforcement of the fish and game laws, and what additional legislation is necessary for the protection of fish and game.
7. What should be the *close* season for black bass?
8. What are the best fish with which to stock our streams and lakes?
9. What is the present condition of the fishing interests of Michigan City and other Indiana lake ports? What has it been in the past, and what are the possibilities for the future?

Mr. Chairman. You have heard the proceedings of the preliminary meeting. These topics will be before the convention, and it has been suggested that committees be appointed separately for the consideration of each one of these topics.

Topic first is: "For the best method of perfecting a State organization," and the committee on that will consist of B. L. Smith, Rushville, Ind.; O. F. Dewey, Goshen, Ind.; W. P. Fishback, Indianapolis, Ind.

The second topic is: "The best method of forming local societies." The committee will consist of R. C. Smith, Crawfordsville, Ind.; Cicero Sims, Frankfort, Ind.; W. H. Sands, Rushville.

The third topic is: "The best method of securing the influence of the agricultural societies." The committee will consist of Elisha Howland, Marion County, Ind.; James Kingsbury, Indianapolis, Ind.; W. T. Dennis, Richmond, Ind.

The fourth topic is: "The best method of securing the influence of the press." The committee will consist of John A. Stevens, Rushville, Ind.; A. W. Hatch, Indianapolis; W. P. Fishback, Indianapolis.

The fifth topic is: "How best to create a sentiment in favor of fish and game protection." The committee will consist of B. Border, Winamac, Ind.; Eli Lilly, Indianapolis; W. R. Pleak, Greensburg, Ind.

The sixth topic: "What are the best methods of securing the enforcement of the game and fish laws, and what additional legislation is necessary for the protection of fish and game?" The committee will consist of J. P. Applegate, New Albany, Ind.; H. E. Smith, Indianapolis; Ignatius Brown, Indianapolis.

The seventh topic is: "What should be the close season for black bass?" The committee will consist of B. K. Elliott, Indianapolis; Asher Wert, Crawfordsville, Ind.; Willis Vajen, Indianapolis.

The eighth topic is: "What are the best fish with which to stock our streams?" The committee will consist of Frank Buker, Rome City, Ind.; W. H. Dye, Philadelphia, Ind.; A. H. Nordyke, Indianapolis.

The ninth topic is: "What is the present condition of the fishing interests of Michigan City and other Indiana lake ports? What has it been in the past and what are the possibilities for the future?"

I will constitute myself a committee of one on that topic, inasmuch as I have procured from competent authority at Michigan City a complete synopsis of the fish business of the past and of the present, which will be incorporated with the proceedings of the convention.

The Chairman. It is understood that a call of the committees will be had at the close of Prof. Jordan's remarks, and those that are ready to report may do so.

Dr. Metcalf. I move that we adjourn, and that the committees convene until 3 o'clock.

The motion to adjourn until 3 o'clock P. M. was seconded and carried.

3 O'CLOCK P. M.

The Convention met pursuant to adjournment, President Dennis in the chair.

The President. At the suggestion of several gentlemen it has been deemed proper to add an additional topic to the ones already mentioned, which will be:

"The best method of enforcing the laws for the protection of game, and what additional legislation is required in that behalf."

The committee will consist of S. Everett Carter, Seymour, Ind.; D. C. Bergethal, Indianapolis; Barney Halthouse, Richmond, Ind.; Harry S. New, Indianapolis; W. H. Sands, Rushville.

The President. Col. Lilly and B. L. Smith, of Rushville, will constitute a committee to wait on the Governor and invite him to come in and address us.

Upon the arrival of the Governor, the President said: Gentlemen of the Convention, I have the pleasure of introducing to you His Excellency, Governor Hovey, who will now address you. (Applause.)

Governor Hovey. Gentlemen: I have but very little to say to you except to give you a hearty welcome. The cause in which you have assembled here to-day is one of great importance, much more so than the people of Indiana generally understand. If the fish question were properly understood and fish were properly cultivated in the State, thousands of tons of good food would be given to the poor which now remains entirely lost to them. The laws of the State have been very meagre and the people have been very backward in cultivating and encouraging this branch of our home production. I have no doubt that every little stream that runs, every little rill and stream that has living waters, may be utilized and cultivated for the very best character of fishes. Take a stream of not more than two or three feet in width, a pond may be formed in which bass, or even trout, may be cultivated, and thousands of pounds of fish could be raised for the people. But, unfortunately, the people do not care about taking care of what they have; they remind me very much of the boy who had a goose that laid a golden egg; he got tired of getting one egg, so he thought he would kill the goose and get the others. Our people are killing the fish throughout the country; they are poisoning the streams and they are taking them out of season. If the law could be enforced so as to prevent this outrage we would have a much larger supply of fish. As far as I can help make a law, or urge it forward in the General Assembly of the State I will do so with pleasure. I know that most of you understand this question as well as I do, if not a great deal better, but I can see where the people are derelict in their duty. White River is losing its fish, the Wabash is losing its fish, and also the Ohio. When I was a boy and we used to fish there we caught them by the thousands almost every year. Now, it is a rare thing to catch a fish in the Ohio with line and pole, and why? Because the streams have been poisoned by the refuse from cities, mills and factories, and the fish are dying out, and unless we can suppress these nuisances throughout the State they will continue to diminish until there will be hardly any fish left in the country. I hope everybody that loves fishing and that article of food, will do all in his power to prevent the unlawful killing of fish. I hope every nuisance erected in a stream will be suppressed. I again give you a hearty welcome and hope that much good will be accomplished as the result of your deliberations. (Applause.)

The President. It may be some minutes before Prof. Jordan will reach here and I will call the roll of the committees, and those that are ready to report can do so, and those that are not we will pass until they are ready.

The first committee is on topic No. 1: "The best method of effecting a State organization." Is that committee ready to report?

Mr. Fishback. The committee appointed to report upon the best method of effecting a State organization, respectfully report, that in their opinion there should be formed at this meeting a State organization with permanent officers located in the city of Indianapolis. In addition to this, there should be appointed a Vice-president in each Congressional District, with power to organize county societies which shall be auxiliary to the Central or State organization.

On motion, the report was adopted.

The President. The second topic is: "The best method of forming local societies." Is that committee ready to report?

Mr. Smith. We, the Committee on Plan of Organizing Local Societies over the State, respectfully submit the following, viz.: That one member of the State Association from each county in the State, where possible, be appointed to effect an organization in each county seat in the State, without limit to membership, which should be extended to all law-abiding citizens in the county.

On motion, the report was adopted.

The President. The third topic is: "The best method of securing the influence of the agricultural societies."

Elisha Howland. The committee reports that the best method of securing the influence of the agricultural societies is, to make our laws so as to meet the approval of the farmers.

On motion, the report of the committee was adopted.

The President. The next topic is: "The best method of securing the influence of the press."

Mr. Fishback. The committee appointed to report upon the best method of securing the influence of the press respectfully report, that each member of this organization, and of all local organizations auxiliary thereto, should communicate from time to time to the Secretary of the State organization any suggestions or items of information concerning fish culture and protection, such items to be sent to the local newspapers of the State for publication.

Mr. Fishback. By having a central officer here, such suggestions could be sent to him and could be prepared in manifold and sent to the newspapers in the different counties of the State.

On motion, the report of the committee was adopted.

The President. The next topic is: "How best to create a sentiment in favor of fish and game protection."

Mr. Borders. We submit the following report to the topic "How to Create a Sentiment in Favor of Fish and Game Protection:—"

First, your committee has considered in what general classes do we desire to create a sentiment in favor of fish and game protection, and have answered it in this way: The farmers, the poachers who habitually break the laws, and the people who recklessly kill and destroy game and fish, either for love of destroying, or for the market. To reach the farmer is most important, as he more than all others is in a position to break the law or to prevent the breaking of it, and the best way to reach him is to educate him, especially to teach him his property rights in game while on his farm, and in fish while in the streams upon his farm. When he knows his rights in that direction he will not be slow to assert them. The best way to reach the poachers, who habitually break the law, is to enforce strictly the law against his acts of lawlessness. And for the man who recklessly kills for the love of killing, or for the purpose of selling, there is no remedy but stricter laws and the active assistance of the farmers and local organizations. As a means of doing these things your committee would recommend—

That there be a permanent State organization effected of the friends of game and fish protection.

That there be a permanent organization made in each county in the State, subordinate to the State organization.

That these organizations cause to be published in the newspapers of the State from time to time such articles as are calculated to inform the people of the value of fish and game; their property rights in the same, and of what the State and United States Governments are doing to protect and preserve the fish and game.

That these organizations offer a suitable reward for the arrest and conviction of each offender within their respective districts.

That these organizations use all legitimate means to influence the Legislature to amend and make new laws as the same appear to be necessary and for the benefit of fish and game.

That these organizations look after the election, in April next, of such men to the office of Road Supervisor, as will enforce the law.

The local organizations interest themselves in stocking the waters in their respective districts, and securing the assistance of the government in that direction.

That men in favor of protection carefully abstain from infractions of the law.

On motion, the report was adopted.

The President. The next topic is, "What are the best methods for securing the enforcement of the fish and game laws, and what additional legislation is necessary for the protection of fish and game?"

Mr. Applegate. Your committee, to whom was referred the subject: First. "What are the best methods for securing the enforcement of the fish and game laws?" Second. "What additional legislation is necessary for the protection of fish and game?" Respectfully report:

1. We favor the encouragement of local organizations devoted to the interests sought to be subserved. We should create, through organization, personal, persistent effort, by exerting every possible influence, a healthy public sentiment. This can be aided by presenting the matter, in proper shape, to the local press and local agricultural and other societies. The farming class should, above all others, be interested in the matter.

Reports should be made to grand juries, prosecuting attorneys and all others whose duty it is to enforce laws. No member of any fish and game organization should violate any law. A substantial reward should be offered and paid for all convictions of persons violating these laws.

2. Legislation is necessary to enlarge the powers, duties and pay of the Commissioner of Fisheries.

Legislation is necessary to establish a *close* season for game fish. In fact, the *close* season should extend to all fish.

Fish and game associations should be empowered to employ constables with power to arrest in certain cases.

All acts on the subject of the protection of game and fish should be consolidated into one, the same published in pamphlet form and in all newspapers friendly to the cause.

On motion the report of the committee was adopted.

The President. The next topic is, "What should be the *close* season for black bass?"

Judge Elliott. Mr. President, your committee, to whom was referred the question, "What should be the *close* season for black bass?" respectfully report that in

their judgment the taking of black bass in any form—by hook and line, as well as by all other methods—should be strictly prohibited from the first day of April to the 15th day of June. The reasons for these conclusions are so obvious that it is hardly necessary to state them. It may not, however, be inappropriate to say that the taking of female fish destroys many thousands of fry, and it also creates a prejudice against those who angle with the hook and line, as it induces others to believe that this class of anglers are so selfish as to care only for their own interest and pleasure.

Elisha Howland. The report, as read, does not recommend a *close* season except for black bass. It would be a very hard thing to distinguish what men were after if they were permitted to fish at all. My opinion is that the report, before it is adopted, should be amended so as to make a *close* season for all kinds of fish, and I move that the report be so amended.

Judge Elliott. The only question referred to the committee was what should be the *close* season for black bass. We have covered that question in our report. I submit that the report can not be amended without a violation of the rules of order.

The President. The objection is well taken. An additional report might cover the ground.

Col. Eli Lilly. I may be speaking out of order. I don't know that I am. I wish to speak in regard to the question of a *close* season for black bass, and on the report of the committee. It is as easy to distinguish a black bass from any other kind of fish on the string of a fisherman as it is a quail from a woodpecker on the string of a hunter. That is, we might protect one fish—we might protect the black bass—when it is not a *close* season for any other kind of fish. I think as a matter of fact the breeding habits of most fish are such that they are not very easily taken in the spawning season, while the black bass is particularly exposed at that season, and I see no reason why black bass should not be protected by a *close* season when other fishes are not, on the ground that that is the principal game fish, and most of the other fishes are food fishes and not game fishes, and fishes which in spawning time take care of themselves a great deal better than the black bass.

The President. It is very evident the report of the committee is clearly in response to the topic presented to it and it would not be proper for it to travel outside of the record.

Judge Elliott. I think it is worth while to consider the general question just now. For my part I do not believe in going too far in this matter of prohibition. If a young lad wants to go out on a bright spring day and catch a few shiners or a few chubs, if he chooses to do that, I don't think we ought to undertake to prohibit it. All we can do is to prohibit the taking of game fish out of season. If we undertake to do too much it will result in doing nothing. I do not believe in stringent laws that will never be enforced. If we can protect the bass we will be doing a good deal, and let us do that first, and when we get further on if it is necessary to protect other fish let us do that. But now it is enough to protect the king of the Western waters.

The President. The Chair decides the amendment is out of order.

W. H. Dye. I think the report is all right in its present shape. It is only to protect bass. If you try to protect all fish there would be trouble, because everybody would say you are keeping them from fishing during fishing time; but if you make it on the bass they will all help to protect it.

Mr. Vajen. It seems to me that while the topic is limited to black bass that the other fish should be protected as well. I think that ought to come in under another motion. Under the topic that was given to us we have reported as well as we could.

On motion the report of the committee was adopted.

The President. The next topic is, "What are the best fish with which to stock our streams and lakes?"

W. H. Dye. The committee to whom was referred the topic, "What are the best fish with which to stock our streams and lakes," would respectfully report as follows:

That the native fish in the lakes and streams are the best fish to stock with. They are named in our report as follows:

Frank Buker. Bass and pike for streams and lakes.

W. H. Dye. Would add carp, cat-fish, pike family and pike bass for northern lakes and streams.

Frank Buker. For rivers, black bass and striped bass; for lakes, strawberry bass or croppies, and all the bass family and jack salmon for deeper rivers and lakes.

Col. Lilly. Pike family and pike perch.

On motion the report was adopted.

REPORT OF FISHING INTEREST OF MICHIGAN CITY.

W. T. Dennis, Esq., Commissioner of Indiana Fisheries:

In reply to yours of December 7, I beg leave to say that it is almost next to impossible to obtain any accurate statistics of the fishing business in this city for the last twenty years, as no official record has ever been kept. By diligent inquiry I have collected the following information, which I trust you may be able to use advantageously. In the years from 1875 to 1880 the fishing industry of this city was of great importance. Fourteen separate firms were engaged in the fishing business at one time during those years, though twelve would be about the average. Each of these firms caught on an average about 2,500 pounds of white fish and trout per day during the season, which lasted about five months. There were days when the daily catch far exceeded this average. Aside from white fish and trout a large quantity of perch were caught, but their value was small. From 1880 to the present day the business has steadily declined. There are at present only three firms using gill nets, and about two more who fish pond nets only. The catch of white fish and trout for the last season would not average above a thousand pounds a day, and the season was a very short one, being only about six weeks. There were about 500 pounds of perch caught daily, worth about half as much as white fish and trout, and mostly sold in this and surrounding localities. All the white fish and trout caught here are shipped fresh in ice to commission houses in Chicago and retail dealers in this State. Packing is only done when the Chicago market

is overstocked, and fish can not be disposed of fresh. About fifty barrels were packed here in the last season. It is safe to say that not 10 per cent. as many men are employed, or 10 per cent. as much capital is invested in the fishing industry here now as there was ten years ago. There are many reasons that contribute to this decline in the business. When it paid well a great many people went into it, causing a corresponding increase in the supply of fish. This caused the price to depreciate and bring the demand up to the marketable supply. The immense drain on the supply of fish in the lakes soon began to tell on the catch, and the fishermen began the use of smaller sized nets—that is to say, nets with smaller meshes—thus catching out the fish half-grown. Another cause exists in the outrageous manner in which fish are permitted to be caught in northern lake ports, notably Saugatuck, Mich., and Wisconsin points, in the month of November when white fish and trout are spawning. It is not rare to take from a white fish at this season a quantity of spawn nearly, if not quite, equal to the weight of the fish. I need not point out to you the result of this practice; it will be self-evident. Again, another cause: At the points mentioned gill nets set out in the lake at this time of the year are likely to be overtaken by ice and storms, making it impossible for the owners to reach them until spring. In many cases they are never found. These nets are floated by corks, which, being oiled, will float a long time. Nets adrift upon the lakes in this manner will catch tons of fish that will stay fast in the nets until they rot out, and their places are taken by live fish to meet a similar fate. I know of no remedy, unless Congress should take the matter in hand and prohibit the catching of any fish in the lake with nets during the spawning season at points where they are known to spawn; also, to regulate that no gill net with a mesh less than four and one-half inches, or pond net with a mesh less than three and one-half inches when new, be used; that the use of “aprons” in pond nets when lifting for the purpose of preventing the escape of small fish, will absolutely be prohibited, and that the casting of gill nets out in the lake at a season of the year when their recovery is doubtful be in some manner restricted. Trusting this information may fully cover your inquiries, I have the honor to be,

Very respectfully yours,

M. T. KRUEGER,
Mayor Michigan City.

Col. Lilly. Mr. President, of course the paramount matter with us here is the protection of fish in our streams and lakes, those bodies of water and streams lying entirely within our State. But at the same time there is certainly now nothing of greater economic value than the food supply of our people, taking the people of Ohio, Michigan, Pennsylvania, Indiana and the small portion of Illinois that strikes on Lake Michigan, than the preservation of the fish already in the lake and the re-stocking of the great lakes north of us. It occurred to me some time ago when I was quite a young man, long before the war, that Michigan City was a great point for the shipment of fish, but, according to the report, that industry is almost entirely destroyed. I think there ought to be a strong committee appointed to take charge of that matter in a degree, and co-operate, if co-operation can be had, with the State of Ohio and other States bordering on the lakes, that uniform laws

may be passed. I do not think it is possible for a national law, although the government vessels—the Fish Commission steamers on Lake Erie—are now enforcing the fish laws there, because it has been only a few weeks since I saw the steamers at work destroying weirs and nets in Lake Erie. I should think that this committee ought to consist of the Fish Commissioner of this State, the Mayor of Michigan City and probably another member of the committee to be named by those two. Perhaps it ought to be a man from that part of the State. The manner in which the Government has gone to work to re-stock and build up the food supply of Lake Erie is simply wonderful. They have an enormous hatchery at the city of Sandusky, Ohio. They take the eggs off the ground or take them from the fish in the fall when they are ripe and bring them into the hatchery and fertilize them first, of course, and they are there stored up in jars of running water all winter, and in the spring, when the temperature of the water in the lake rises to a sufficient warmth to hatch the eggs, they are hatched at the same time they would naturally hatch on the reefs, and they are collected in boxes and carried out and put in their home, and in that way the Government and the State of Ohio together have built up and increased the food supply there until Sandusky is the greatest fresh fish shipping point in the world. I think we ought to have a government hatchery established at Michigan City for the purpose of stocking the southern end of Lake Michigan and the tributaries thereto, and bringing Lake Michigan up to something approximating Lake Erie at this time in regard to food supply. It is simply amazing the work that has been done in that direction by intelligent propagation and preservation, not limiting the fishing in proper season at all but simply providing for re-stocking and keeping up the supply in an artificial way.

I move that a committee be appointed which shall consist of the Fish Commissioner of Indiana, the Mayor of Michigan City, Indiana, and others they may name, to urge upon the general Government the propriety of establishing a hatchery at Michigan City. Adopted.

Mr. Fishback. Prof. Jordan is now here, and I suggest that we suspend for the present and hear him.

The President. Gentlemen of the convention, I have the pleasure of introducing to you President Jordan of the Indiana State University, of Bloomington, Indiana, who will now address you.

PROFESSOR JORDAN'S REMARKS.

Prof. Jordan. I don't know that I am prepared to say anything until I see what you are talking about and get worked up to the occasion. I came here without preparing any set address or intending to present any set paper or say anything especially, except as it might be called out by circumstances. I came in during the latter part of this discussion in regard to the establishment of a hatchery at Michigan City, and all I heard, I am very glad to endorse. I believe that a hatchery is worth more than any kind of protection laws, as far as white fish and trout are concerned. With a hatchery you can hatch thousands and thousands of young white fish and young trout, and it would be worth more than any kind of restriction placed upon fishing, although I think in many cases it is desirable to place a restriction on the size of mesh, and when fish should be caught, and

things of that kind. I do not see any particular reason why, so long as fish hatcheries are being established in this country, Indiana should not have one. I believe the most useful place would be somewhere in the neighborhood of Michigan City, for the purpose of stocking the southern end of the lake.

I don't know that I want to make any address now until I know what is wanted of me, but I should be glad to talk at any time on anything that I know about.

The President. I think I can say with a good deal of certainty that this convention is anxious to hear from the Professor in regard to our indigenous fish and as to their propagation, value and best means of protection, and any other incidental matters that will go to help out in protecting the fish we have and increasing the indigenous fish of our State.

Mr. Fishback. Especially our black bass, the friend of the angler.

Prof. Jordan. I made, before I left home, one or two memoranda as to the number of kinds of fishes in this State. There are, so far as we know, one hundred and fifty-five different kinds of fishes in this State. Of these, about fifty are good as food fishes. Of the rest there are about ninety that are little fishes and minnows, and the latter too small to be of any account except as food fishes for black bass. There are ten fishes, more or less, large enough for food, but too tough and coarse for anybody to want to eat them, such as the paddle fish and dog fish and a few others large enough and game enough, but not fit to eat. I suppose there are no fishes that can be brought to Indiana as good as those we now have, except the suckers, which are pretty nearly worthless, and a few others that are full of little bones.

We have here as good fishes as are found in any region where the waters are as warm as in Indiana. In the States of Michigan and Wisconsin, where the waters are cold, or the State of Colorado, where they have the cold, clear mountain stream, or in the New England States, they can have trout. Of course, none of our fishes, to my mind, quite match the different kinds of trout, but for regions where the waters are more or less warm I suppose there is no fish that is the equal of the black bass. They are not only a game and food fish, but are good for any purpose that fish are naturally good for. I suppose that in the lakes, like Lake Michigan, there is no fish in the world as good as our own native white fish. I suppose there is no species of fish as valuable or less destructive, because the white fish does not feed upon other fishes; it does not do any mischief, and probably no fish in which the flesh, the same amount, would be as valuable; and the early families in the northwest found they could live longer on white fish than on any other kind. Some of the early travelers make the statement that they could live longer on white fish without getting surfeited than on any other kind of fish.

I have an idea that so far as the kind of fish are concerned, Indiana is all right now, and the main question is, not of increasing the varieties, but encouraging the protection of the best fish we have.

In regard to the different kinds of fish, I have a few memoranda here. There are, I think, twenty-seven different families of fishes represented in the State. Of these, the fishes that are fit to eat may be, I suppose, confined to a dozen families. We have in this State two kinds of sturgeon. I found both in the lakes and rivers; running up the rivers in the spring and spawning. The flesh of both is

rather coarse, one a little better than the other, and both are often seen in our markets. I do not think it is worth our while to do anything in regard to the sturgeon, one way or the other. We have, also, besides the sturgeon, the paddle fish, or shovel-nosed cat, that grows to quite a large size, and has no troublesome bones, and is sometimes brought into the market and sold as cat-fish. I have seen them cut into steaks and sold as cat-fish steaks to the unsophisticated citizens of Bloomington. I have found them not fit to eat. I have tried hard to eat them; I have tried hard to eat every kind of fish. I think it is my duty to eat all kinds, or let them eat me, but I do not think the paddle fish is good to eat. Of the cat-fish, we have a number of kinds. One of these, the channel cat, the white or blue cat of the southern part of the State, I think is one of the best food fishes in the country. I think when these are found in clear water, under favorable circumstances, they are not inferior to the trout. I think, and I urged it on the United States Fish Commissioner, that the channel cat ought to have a chance. It grows to be about that long (indicating about 18 inches), and is slender, having brown spots over its body; you probably know it. This fish, under favorable circumstances, is tender, rich and delicate, a nice food fish.

Mr. Fishback. And very game?

Prof. Jordan. Yes, sir. Besides that there is another cat-fish that grows to a large size and has a projecting jaw; we are a little short of a particular name for it. I have heard it called a Russian cat and a lot of other names. It is yellow, with black blotches over it, and has a flat head. It lives in muddy water, but I have found it an excellent food fish. There is the Mississippi cat, caught in the Ohio and Mississippi rivers, which grows to the weight of one hundred and fifty pounds, and I have heard of them weighing three hundred pounds where they had been weighed by guess. They grow to be as large as a good sized man. While they are somewhat coarse they are a good substantial food fish, and in the Ohio river and Lake Michigan they are of considerable value. There is the little bull-head, as we used to call him in the East, or small cat-fish, which grows about six inches the first year, and the next year about three inches more, and gradually grows until it weighs three or four pounds. It is an excellent fish and does well almost anywhere. The cat-fish is a good food fish except for the fact that it has to be skinned, and when his head is cut off there is not much left. They are among our best. I think the channel cat is one of the best fishes in the market, and I think when it comes to be well known that it will be found to be a very valuable fish. I do not know of any fish that can be brought from any other country to ours that will compare with the channel cat. I remember seeing in the London Punch an objection to the bringing of that fish to that country, and it closed in about these words:

“Oh, do not bring the cat-fish here;
The cat-fish is a name I fear.
They say the cat-fish climbs the trees
And robs the hen roosts; down the breeze
Sends the prodigious caterwaul;
Oh, leave him in the Western flood,
Where Mississippi churns the mud;
Don't bring him here at all.”

The suckers are quite numerous. There are probably fifteen varieties of them in the State. The buffalo is the largest of them, and besides the buffalo there are the red-horse and various other kinds. Some of the fish taste fairly well, but are full of small bones, which look like little pins gathered together like sheaves of wheat. They are rather undesirable. I think it is a shame that some of our rivers have nothing in them except these suckers. I heard last summer how the Indians in Idaho treat suckers. They take the insides out and stick them up on the spines of the cactus, or anything they can stick them upon, and leave them there all summer to dry in the sun, and in the fall the outside is rotten and they strip it off and the inside is left, which is very rich, and the Indians are very fond of it. All the suckers live in the deeper waters during the summer, and come up the rivers to spawn in the spring, so that all these different kinds can be seen running around the shoals and ripples in the different streams in the spring. Then along in the summer they go down again. I think that most of them, or all of them, are destructive to other fishes. I think that they devour the eggs of all kinds of fish they run across. In some places where the suckers and trout spawn at the same time the suckers are destructive, as they follow up the trout and eat their eggs. I think they do more mischief to the better fish than they do good by furnishing food to other fish—that is, bass will eat young suckers, but the suckers eat the bass eggs. A minnow does sometimes destroy the eggs of other fish, but furnishes food for the bass. They are not large enough for a food fish.

There are two or three kinds of chubs that can be caught with the hook and line, but they are not of any special account. I think all of you know the carp. They multiply more rapidly than any other kind of fish. I think they can live in any kind of a pond. It is a fish that will adapt itself to the most unfavorable circumstances, living, multiplying and furnishing a large amount of fish food. Once or twice in Germany I found carp that were excellent, but then I failed to find any that I really thought were good to eat in this country. Whether I was unfortunate in getting the carp at the wrong time of the year, or whether the cook was at fault, or what the difficulty may have been, I certainly have a very low opinion of the carp as a food fish. I think the value of the carp comes from the fact that everybody can propagate it, as they will live and multiply on refuse or vegetation; they live on anything. Trout, so far as this State is concerned, are of minor importance. There are two or three streams in the northern part of this State cold enough for trout to live in.

The hatchery at Rome City has furnished a considerable number of trout. There are none of them native to our streams. In Lake Michigan there is one kind of trout that grows to a large size and is an important food fish. To the trout family the white fish belongs, and the cisco, or Michigan herring, which is found in Lake Michigan and in a number of small lakes that were once tributary to Lake Michigan. I suppose, from the fact that they are found in these small lakes, that they were formerly connected with Lake Michigan. The pike are represented in this State by two kinds. The large pike or pickerel, in the northern part of the State, is excellent for food. I think the pike or pickerel is one of the very best fishes, but it is extremely destructive. They are said by some to be mere machines for the assimilation of other organizations. It takes almost a ton of other fish to

furnish a good sized pike. A sort of an exaggeration of the pike is the muscalonge, which grows to a very large size—six, eight or more feet long. This pike is very similar to the other, differs very little in color and some other respects, and, like the other, is a fish that feeds upon other fishes. It is the most voracious of all our fishes. The white flesh of the pickerel divides itself in an appetizing way when it is baked, and in spite of their destructiveness I think they ought to rank high.

EELS.—It is thought they breed only in the sea—that the spawning only takes place in salt water, and they that come up into our rivers do not spawn. That is not yet proven. Very little, I suppose, can be done with the eel except what is now done—if you catch him he is good to eat. The flesh of the eel is very good to eat. If you cut them in short pieces they do not look so much like snakes, and, like the sausage, may go down all right. It is said that the oil is prescribed for rheumatism, and that it is a sure cure.

Besides the fishes spoken of we have in this State the sunfish. The sunfish family is found only in the eastern part of the United States and they are not found in other countries or found to amount to anything in the western regions, stopping with the Rocky Mountains. There are something like a dozen kinds here. They feed upon the young of other fish. They build nests and lay their eggs in them and watch the nest and watch their young. The only way I know of propagating them to any extent, is to catch the young and let the fish take care of themselves. The fish culturists have not been fortunate in fertilizing the eggs of any of the sunfish family by the methods used with the trout. Among the different fishes of the sunfish family there are two kinds of black bass, in most respects very much alike; one has a larger mouth than the other, and likes to live where the water is quiet. The smaller mouth fish likes to live where the water is active. Indiana is the home for them, and old fishermen say that there never were such bass streams as in Indiana, and that White River is the best bass stream they have ever known. I think probably nothing better could be done—if we could devise a way—than to bring the bass back, and where there are now a dozen scattering fish put two or three thousand. One good thing has been done by the United States Fishery Commission, and done at my suggestion. A car has been sent to the western part of Illinois to visit the sloughs and bayous of the Mississippi and Illinois rivers and scoop up the young black bass which run into those bayous and sloughs in the spring and get caught there by the receding of the water, and there are millions and millions of bass destroyed in that way in Illinois and a great many in Ohio and some in Indiana, although the number of bass destroyed here is not so great. These bass have been gathered up in the State of Illinois and a good many have been put into the streams of Indiana. I suppose the Fish Commissioner is always ready to dump a carload of these young bass from Illinois into any stream where wanted.

Then we have the sea bass that is quite closely allied to our black bass and the yellow bass that runs up the Mississippi and is occasionally taken in this State. Both of these are good food fishes and game fish. So far as their general value is concerned, they rank along with the black bass. In the perch family there is the

yellow perch, found in the northern part of the State, and which is especially abundant in Lake Michigan and the little streams running into it. It will always take the hook readily, with any kind of bait. I think it is a poor food fish. I made that statement once and some of the friends of that fish came at me pretty lively and I went to market and bought one and had it cooked, and it was just as tasteless as it was before. I think that the perch is not one of the best fishes. Allied to the yellow perch is one that goes by a variety of names. Most people in this State call it the salmon or wall-eyed pike. It is not a pike; it is sometimes called the pike-perch. Of these two kinds, one reaches a weight of ten or twelve pounds and is a very good food fish and a very game fish, but unfortunately, it is very destructive to other fishes. It has a large mouth and quite large teeth. The rest of our fishes are not of much account. There is a kind of cat-fish which lives in the Great Lakes; they call it the lawyer fish because (as a fisherman told me) they would bite at anything and were not of any value when caught. It is a very poor, tasteless sort of a fish. I saw some of these fishes in Norway, cooked in a new way; they had them boiled and then had vinegar poured over them. It does not seem a good way to cook any fish, but being absolutely tasteless, when you pour vinegar over them they taste like vinegar.

The red-eye, goggle-eye or rock bass is one of the sunfish which I meant to include under that head. It is one of the best sunfishes, and is a good game and food fish, and taking the State through it is one of the very nicest of the sunfishes.

Judge Elliott. Does the term black bass include the small-mouth bass and large-mouth bass, properly?

Prof. Jordan. The name black bass was originally given to both of them, and at first they did not distinguish between them, but after a while those people who did distinguish began calling the large mouth one by other names, such as green bass, Oswego bass, a name given in the State of New York, and bayou bass. There is a disposition among some to call the little mouth the real bass, and the other one some other name. Neither one of them is black, both are green; the large mouth one has a dark stripe running lengthwise of the body, and the small one has a tendency to bar the other way, and as they grow older these stripes or bars are less sharply defined. I call one the large mouth and the other the small mouth black bass. If you should go to some of the Southern States you would hear them called trout, and in Virginia they call them chubs, and in other places in the South they call them jumpers.

Col. Lilly. Is there no difference in the so-called trout of the South and our large-mouthed black bass.

Prof. Jordan. They are both found through the South where the water is suitable. Through Northern Alabama and Georgia, the small-mouth bass is found. Down in Texas the large-mouth bass predominates. Both are found north and south, the difference being in the kind of water; it is not often you get the two together; one is where the water is running and the other is where the water is quiet.

Mr. Fishback. Is there any way by which the black bass may be propagated?

Prof. Jordan. I think the Fish Commissioners have not yet succeeded in fertilizing the eggs at all successfully. They are not like the white fish and trout in

that respect. The only way to propagate them, as far as I am informed now, is to take care of them and take care of the young.

Mr. Fishback. Protect them in the *close* season?

Prof. Jordan. Yes, and gather up the young and put them in streams and ponds.

Col. Lilly. What ought to be the *close* season?

Prof. Jordan. I have not thought of that. They spawn in the spring, by June; I find it hard to remember dates of that kind, I would rather trust to my notes.

Judge Elliott. Does the water in which they live have anything to do with the color of the fish?

Prof. Jordan. It does. Where there is vegetation they are almost always dark. Where the streams are shallow with sand or blue rock or blue mud bottom or clay bottom, they will be very blue. That is true of all fish.

Mr. Fishback. Is it the same way with trout?

Prof. Jordan. The same way with all fish; where there is vegetation they will be black, and blue where there is the other kind of water.

I see Professor Jenkins here, who recently returned from the Sandwich Islands. He says fish are eaten there without being cooked. I would be interested to hear from him about that. We may be mistaken in our way of eating fish, and it may be we should eat our suckers without cooking.

The President. We should be glad to hear from Professor Jenkins.

Prof. Jenkins. Not knowing the object of the meeting fully I did not come prepared to say anything. Of course it is well known that the people of the Sandwich Islands and of the South Sea Islands, generally eat, or in times past, ate their fish raw altogether. The missionaries have introduced a great many customs among the Sandwich Islands that did not prevail, and some of them to the hurt of the Islanders—among them, cooking fish. There is a kind of fish well known through almost all seas, that is like our suckers, in the particular of being very full of bones, and most of the civilized people of the Sandwich Islands still eat those fishes raw, claiming that the cooking of fishes having small bones in them makes the bones very rigid, and consequently not nearly so pleasant to eat; but taking them raw the bones are flexible and do not bother them in eating. In fact, they think that is the only decent way to eat fish, anyway, to eat them raw. They cut them into small pieces and salt them. If we only look at it, the flesh of the fish is prettier raw than when cooked, and I could not find any argument against eating fish raw, especially as we eat a much nastier thing, the oyster, in the same condition, and think it good.

It was very interesting for me to find that a "prophet is not without honor save in his own country." One of the fishes that brought the best price when brought into the market, and which was in limited quantities, was our little bull-head, which Professor Jordan has already referred to—our little cat-fish. It has been introduced into the islands as a pond fish, and there propagated, within the last few years, through the instrumentality of the United States Fish Commission, for some exchange. Some cat-fish were taken to the Sandwich Islands, and they have been cultivated to a considerable extent as a pond fish, and are brought to

the market, and the natives hold them in high favor. They are great fish eaters, anyway, and the Chinamen, who form a very large proportion of the population of the Sandwich Islands, look upon them with favor. I suppose their resemblance to a good many of the Chinese deities has a good deal to do with it; it looks like they were getting even with the old fellow by eating his image.

I am pleased to see a movement made in this State for the establishment of a hatchery. The question as to the propagation of fish, and what effect this food supply will have upon the supply of the fish and the season when they shall be protected, are, of course, questions which have been investigated to a considerable extent already. If in Indiana these fishes, which I would also agree with the doctor in saying they can not probably be improved, were protected in the manner suggested, we should know about how they would affect the fish food supply, and we would then be going in the right direction. I should like to see that committee be successful in its work, and I would suggest—I may be making a mistake—I would suggest that Professor Jordan be added to that committee. He has a personal acquaintance with the United States Fish Commission, and the influence that he has with them and with those connected with the work, will greatly aid that committee in its successful investigation. The committee need not be of three. If it should be necessary to have another gentleman from that part of the State added, that could be done also. I will not make the motion, for others are here who are more intimate with the question before you.

Col. Lilly. I made the original motion; I think the suggestion an excellent one and I move that Prof. Jordan and Prof. Jenkins be added to that committee, and that the scope of the committee be extended so as to attend to the stocking of the Indiana lakes and streams, using their influence to induce the general government through the agency of the Fish Commissioner, to establish and maintain breeding ponds for such fishes as can not be propagated by artificial means, as well as the establishment of a government hatchery on Lake Michigan. Carried.

The committee as named consisted of W. T. Dennis, D. S. Jordan, O. P. Jenkins, Martin T. Krueger, Mayor of Michigan City, and one other to be hereafter named.

Col. Lilly. I move that a vote of thanks be tendered to Prof. Jordan and Prof. Jenkins for their entertaining talk. Carried.

The President. We would like to hear from Dr. Brayton.

Dr. Brayton. I will say I am no longer an ichthyologist. There was a time that I was associated with Dr. Jordan in the study of fishes. For the last four or five years I have withdrawn, but my love still remains. I am glad to see the good work go on.

The President. We would like to hear from Prof. Everman, of Terre Haute.

Prof. Everman. I am glad to learn that an effort has been made to save the bass in bayous and sloughs in Illinois. A great quantity of black bass are destroyed in the ponds along the lower Wabash every year, by the drying up of these ponds. Now, if the people interested in the black bass in the State of Indiana would get some means to transplant those black bass from these ponds and sloughs

into the rivers or other bodies of water in the State, very much could be done to keep up our supply of black bass in the State. A number of ponds along, say from Lafayette to the mouth of the Wabash, into which the black bass run in the spring when the river is up and in which they get caught by the fall of the river, and in which they die by the drying up of the ponds, are considerable, and the number of fish lost very great. Under the direction of the Fish Commissioner, a little work was done towards reclaiming the fishes from these ponds this fall. Something like sixty to one hundred thousand pounds of black bass was transplanted into Lake Maxinkuckee and other lakes and streams. I think very much more could be done. I wish to say, also, that I am very much in sympathy with a movement which looks to the protection of the fish in this State.

Mr. Fishback. I would like to ask Mr. Howland and others what can be done by the anglers to make the farmers look upon them with some degree of favor. It seems to me if the anglers are kept off the streams with hook and line certain times in the year, that would be enough to create a public sentiment for the enforcement of the law. I have tried a good deal to enforce the law. T. A. Morris and I formed a voluntary association composed of ourselves, and offered \$25 reward for each man convicted. We found the grand juries were composed of farmers and it was very hard to get indictments. We ought to consider what legislation and what it is on the part of the anglers that makes that so. I believe that the farmers when they once see how valuable a thing this is, and that we keep off the streams and keep other people off of them during certain seasons of the year they will get ready to do away with seines and obey the law with the balance. I would like to know how we can get the agricultural brethren interested. I would like to do anything I can to make the farmers believe that it is for their benefit to have the laws enforced.

Charles Howland. I think Mr. Fishback has been fishing around where the farmers are not very intelligent, or where there was a disposition to be not very law abiding. I say to him, that in my neighborhood I do not think there is a seine within five miles of me. There is a disposition on the part of some landlords along the streams to feel a little sour towards the citizens of the city who trample over their pastures and break down their fences and fish in and out of season and take the fishes at all times. Of course we do not expect that these gentlemen here, who are interested in protecting the fish, would do anything improper, but it is the masses of the people in the city. Why, Sunday mornings about the first of May, there are fisherman along the banks of Fall Creek every twenty feet, I will guarantee, for ten miles up. It is not very pleasant for those who own the land to have their fences broken down and the fish caught, too. We may say to ourselves, if all this protection and all our abstaining is for the benefit of those gentlemen in the city in the first of the fish season, who come out and take them all, what is there in it for us? If you will make it to the interest of the farmer to protect the fish and keep the city gentlemen away until the proper time, I guarantee there will be plenty of fish there. You can depend upon the farmers of the country to assist in the enforcement of the law. It is not the farmers of the country, but the gentlemen of the city, who are doing the mischief. If you could get hold of some of these men who live in the city and take them before the grand

jury, perhaps you might get them indicted. They slip out sometimes when the farmer is asleep or else on Sunday when he is at church and do their mischief, and they are never caught. I am here to-day as much interested as the city gentlemen are to have an abundance of good fish, and I am in favor of keeping fishermen from fishing during the time recommended in the report of the committee. I think there should be a season when there should not be any fish taken. You may apply it to the black bass if you wish to, but I think you make a mistake there. I think you want to say "bass," including all kinds of bass, because just as sure as Mr. Fishback should happen along a stream and catch a bass, my word for it, it would not be a black bass, it would be the other kind; and so you see how hard it would be to get a bill before the grand jury, as he would come in and declare that the scales were yellow and not black. It ought to be so fixed that neither the farmer or the city gentlemen can get out of it. I would say that from the first of May to the middle of June there should not be any fishing for bass. You might say they should not fish with a minnow or fly, or something of that kind that will prohibit the taking of bass of any kind.

Mr. Fishback. In Ohio they do not allow any fishing with the crawfish or fly during the close season.

Mr. Pleak. I think I can safely state that there is a change of sentiment among the people of Indiana in regard to the protection of fish and game. I will give my observation of the squirrel law. The last session of the Legislature fixed a close season for the squirrel. I can say truthfully that the law was very generally observed. What is the result? I think that most any man who has hunted can testify to the fact that there has been a great many more squirrels this season than usual by reason of such protection, although people had a misconceived idea as to the time the law went into effect; yet they observed the law when it was not really in effect, and for that reason we had more squirrels. I want to say a word as to fish protection. I want to see a close season for fish of all kinds, and would suggest that this be from the first day of April to the middle of June; I think that will take in all parts of the State. What will be the effect of a definite close season for all kinds of fish? The farmers' busy season is from the first of April to the middle of June, and if our city friends are kept away from the streams the farmers will likewise feel like staying away, and when the season begins they will feel that they are upon a par with the city gentlemen, and we can all go fishing, and I think it would be the province of this convention to take that view of the matter, that we have a close season from the first of April to the middle of June, and prohibit fishing in all our lakes and streams for any kind of fish. Let us keep away from the streams, and let the fish propagate. I think if we will do that and have a close season and look to the enforcement of the law governing the taking of all kinds of fish, that we will not need very many hatcheries or very much restocking. That is the first thing for us to do, to look well to the protection of the fish during their spawning season. Whenever we will protect them and keep our city neighbor and our farming friend from the stream and have them put aside the gun, rod, reel, seine, gig, spear, pot, trap, net and weir, place them aside for six, eight or ten weeks, it will not be many years until the streams of Indiana will be

populated with tons of food fish where we now have pounds. I am from the southeastern part of the State, and we have some elegant bass streams there, and any legislation that will look to a close season for all kinds of fishing I can guarantee the fishermen of southeastern Indiana will favor and back it up, and prosecute vigorously to a judgment the violation of the law.

Charles Howland. I move that it is the sense of this meeting that there should be a close season for all fish.

Judge Elliott. I desire to say for my part that I want to heartily endorse what Mr. Howland said, as it is one of the most sensible speeches I have heard in a long time. A good deal of mischief is done by people going out from the city, pretending to be fishermen. They are not fishermen. They go out and take a lot of whisky and beer and have a big spree and do a great deal of mischief. Wherever I have been there has been a good deal of complaint of the Sunday fishermen. It seems especially that the mischief is done on Sunday. I believe that is one of the things we ought to look after. No gentleman ought to go fishing on Sunday in violation of the law.

Mr. Fishback. Not where his friends can know it.

Judge Elliott. What a man is ashamed for his friends to know, he should not do. That is what creates the prejudice in the minds of the farmers. I think the close season ought to be against fishing with minnow or crawfish. It is hard to make a law that will not be evaded. If you make a law too strictly prohibitory no one will obey it. I think for the beginning we have done enough. I think Mr. Howland's first suggestion is the best that can be made, and I, for my part, thank him heartily for that suggestion. With respect to his motion I think it is going a little too far for the beginning; we may reach that hereafter, but I think if he puts his motion prohibiting fishing, during a given season, with the fly, minnow or crawfish, it will accomplish very much more practical good.

Mr. Sands. I am heartily in favor of a close season in hunting and fishing both. In a few days the hunters will have to step down and out, and the pot-shooter begins. These men are the ones we have to shut up. I believe all honest farmers will obey the law, but the men this law is intended to reach will not. They can take along a pole and sit on the bank and can find where the fish has its nest just as well as they ever could, and if you approach them they say they are fishing for shiners or something of that kind, and so it is in the field to-day. On next Friday we have to take our guns home and put them away until the next year, but the pot-shooter goes out rabbit shooting and sees a covey of birds and goes for them. I am in favor of a close season for game and fish both. I say, let us all quit—farmers, merchants, lawyers, doctors and preachers—all stay at home until the season commences.

Prof. Jenkins. I wish to mention one point in favor, it seems to me, of a close season for all kinds of fish that has been mentioned. This boy that goes out and catches a string of chubs and shiners is not the harmless boy that might be supposed. It must be remembered that the number of bass in a stream depends upon a great many things more than how many are taken out of the stream. The number of bass in a stream is a very complicated problem to solve. One element of that is the supply of food. To attempt to increase the number of cattle in the

State simply by looking to how many are killed and how many are propagated, without paying any attention to the method of supplying the food, would be a question just such as we have been speaking of here. We must remember that the home of these small fishes is the pasture land of the black bass. If the streams are to be as they were before in regard to the black bass, the balance of life in the stream would have to be the same as before. Suppose the boys are restricted to fishing for chubs only, what are the black bass going to do? If you do not protect the minnow you do not protect the pasturage for the black bass. Whatever may be true as to carrying out the law, it is true that one of the important elements of the black bass problem is the pasturage, and it seems to me it ought to be protected if you expect the black bass to increase in number. If you want to bring the number of black bass to the condition they were before they were fished out, why, the best way would be to make the conditions about the same, putting the black bass and minnow on the same footing they were before the black bass were fished out.

Elisha Howland. I am in favor of a close season for all fishes. I would prefer to see a seine used for thirty days in the year with a definite size mesh than fishing with a hook and line. I am satisfied that there is more harm done by fishing with the hook and line in the spring of the year, between April and the 15th of June, than is done with the seine or is possible to do with seines. I once heard of an honest man—it may have been Judge Elliott—who was fishing for cat-fish and accidentally caught a large bass and threw it back, saying that when he fished for cat-fish he caught cat-fish. Most men are not built that way. I am perfectly satisfied that there are some members of this meeting right here to-day who, if they should catch a fine bass weighing three or four pounds, would hate to see it go back. I would hate to myself. It is true we do not catch many of that kind. If there is no fishing done we know the food is left for the fish to eat and left there to propagate, and reason ought to tell us there would be a natural increase.

Mr. Borders. I am in favor of a close season for all fishes. I have some reasons for thinking that the close season as spoken of is too short. I live in the northern part of the State, and fish occasionally in the Tippecanoe River, Cedar Lake and Lake Maxinkuckee. One man can go into Cedar Lake in February or March, just when the weather begins to turn warm, and the ice is pretty thick on the lake, and with a hook and line, fishing through a hole in the ice, can catch more fish in a single day than he can catch in a week in September, October or November, and he can take fish out of there full of eggs. In Ohio they undertake to protect their game, and in order to protect their quails they have a close season excepting for thirty-five days in the year. They had to do that to protect the quails. In order to make the fishing what it was before we spoiled it, it would be better to have a close season half the year than to have the fishing as it is now. It is better to stop the catching of chubs and shiners, which are bass food. If we run a spoon hook over a bass' nest in May the chances are that you will catch that bass. If anybody ever tried running a spoon hook over a bass' nest in May he generally caught his bass. A boy can sit on the bank of a river with a cane pole, line and minnow, and sometimes with a worm, and he can catch that bass off the nest. I have seen them do it. I think the close season ought to be for all fish.

The President. The question is on Mr. Howland's resolution as to a close season for all fish. Carried.

Col. Lilly. I was struck with the suggestion of Mr. Borders in regard to the close season in the lakes. I move that when a close season is made that the committee having the matter in charge be directed to take special consideration of the propriety of making an earlier close season in the lakes of the State than in the streams.

The President. The question is to instruct the committee to make an exception in regard to the lakes as compared with the running streams. All in favor of that proposition say aye. Carried.

Col. Lilly. I move that the gentlemen who have signed the register be considered members of this organization, and all gentlemen who have not signed the register be requested to do so at this or the meeting this evening.

The President. All those that have signed the register here will be considered as members of the State Association, and all members that have not signed will please do so.

Mr. Lilly. I move that the order of business after adjournment will be to complete the organization of the State Association.

Mr. Stevens. The report of Mr. Fishback contemplates organization in several counties, also a district organization. It is not full enough, I think. I move as an amendment to the report that the chairmen of the several county organizations form a district organization in their district.

Mr. Fishback. That is a good suggestion, and I would like to have that incorporated.

The President. All in favor of that say aye. Carried.

Mr. Stevens. We have had an organization in our county for several months. We have had an organization at the county seat, and one in each of the several townships. Each of these township clubs has a chairman and those chairmen come in and meet with us at the county seat. We procured indictments against twenty persons at the September term of court and convicted them.

On motion the Convention adjourned until 7 o'clock this evening.

EVENING SESSION.

THURSDAY, December 19th, 7 P. M.

The Convention met pursuant to adjournment, with President Dennis in the chair.

The President. The organization of a State Association is the first thing in order. What is your pleasure, gentleman, in regard to the business before the meeting.

Col. Lilly. There seems to be no pre-arrangement, nothing prepared in connection with a permanent organization that I know of. The action taken just before adjournment was to the effect that all gentlemen who had signed the register here be considered members of the State Association, and that the first business

after meeting this evening would be to proceed to the formation of a State Association as agreed upon. I do not know whether Col. Dennis has prepared any particular mode or plan for this organization or not.

The President. I have not.

Col. Lilly. I suppose it should be on the general plan of other associations of like character. I believe the Committee, in reporting in regard to organization, recommended that there should be a Vice-President from each Congressional District. The report was received; I do not know whether the report was adopted or not.

The President. The report was adopted.

Col. Lilly. I will suggest there should be a President and Secretary, and the Secretary might as well act as Treasurer for such small funds as would be needed for carrying on the clerical work, etc., of the Association, and probably an Executive Committee to provide for a Vice-President in each Congressional District, and also provide for the recognition of local societies as members of the general Association. Mr. Blair suggests that a committee of three be appointed by the Chair to retire and formulate a simple plan for organization. I make that motion. Carried.

The President. I will appoint Col. Lilly, Mr. Applegate and Mr. Buker as that committee. (Committee retires.)

The President. We have Mr. Carter, from Seymour, a member of the society there, with us. We should be glad to hear from him.

Mr. Carter. I do not know as I have anything to say that will be of particular interest. I came here feeling a deep interest in the cause, and I feel that I have been honored by being assigned to the committee on the topic of the best method of enforcing the laws for the protection of game, and what additional legislation is required in that behalf. I do not know that I am prepared to suggest any legislation on the subject. I often think we have too many laws and too few that are enforced. Had I expected to have the pleasure of being present, I would have tried to inform myself as to the wishes of the people in my locality. We have in Jackson County a society for the protection of fish and game, and we have been vigilant there. While we have only two streams that afford us any sport or any particular amount of fish, we have quite a large field where game is quite plentiful. I was particularly gratified this afternoon at the remarks of Prof. Jordan in regard to the fish of our State, when he referred to the southern portion of the State and to the channel cat. I am particularly gratified, as I look upon them, and so do our people, as being one of the most valuable fishes. While the question which I am called upon to consider is in regard to the game laws, I have not prepared myself and will make a few remarks. If I would write a motto for a meeting of this character, I would suggest these words: "Patience and protection." Interviews with the numerous sportsmen in my locality prompt me to suggest the following: The shortening of the season for shooting quails. A number of hunters in my county prefer to have the date from November 1 to January 1, instead of from October 15 to December 20, as they claim that there is a large number of birds that are not fully developed by the 15th of October. A great many of the sportsmen are fully satisfied with the time. Outside of the quail we have much

that should enlist our attention in my locality. What we call the pheasant is almost entirely extinct. We have the wild turkey in our county, which we guard with jealous care. We have recently seeded our streams with wild rice to allure the ducks to that region. We are visited annually by the wild goose, which gives a few of us some sport. I am glad to see an interest awakening in the cause of the protection of fish and game in this State, and would be glad to lend aid and comfort in any way I can.

The President. I might mention, in regard to the depredations that are committed by unlawful and illegal fishing, the result of some inquiries which I made as regards the amount of fish that have probably been taken from Turkey Lake this season. I wrote to parties who are in a condition to pretty thoroughly understand all the circumstances; they had access to the express company's books there, and they assured me that the amount of fish that had been taken by illegal means from Turkey Lake during 1889, and shipped, would amount to over forty thousand pounds, and that that was rather under than over the actual amount, and that some times as many as a thousand pounds in a single shipment of black bass would be made. I mention this fact that you may have an idea of the depredation committed. If you take into consideration Northeastern Indiana, with more than (rather than less) a thousand lakes which are liable to be affected to some extent, it will give you some idea of the immense amount of fish that are taken illegally and shipped. This should be prevented.

Mr. Dewey. Hundreds of pounds come into the city of Goshen almost every day that these gentlemen have no account of. There have been large quantities taken by the net and seine. If we had a law by which we could prosecute the persons who had the fish in their possession, then the fish could not be shipped or sold.

The President. I should like to hear from the Rushville Club, if any of the members are here.

Mr. Butler. I expect that the members of the Convention would all be glad to hear of the result of the Commissioner's work during the summer. I have seen notices occasionally in the papers in regard to the good work he has been doing.

The President. In reply, will briefly state that I took the office under a cloud. There had been no general arrangement nor anything by which I could be guided except my own judgment. I took into consideration two points in the matter overshadowing all others. One was the protection of the fish we already had, believing that protection could protect, and the next was to afford means for the fish to get up stream, to get into the upper waters to deposit their spawn and to populate the streams in the natural way. In protecting the fish, as far as I have been able with the limited amount of means in my hands, I have made arrests and convictions in Clay, Kosciusko and Vermillion counties, and I understand to-night there have been a number of convictions in Rush County. I employed detectives, with whom I made contracts to pay upon the conviction of the parties, and we stepped in on them and arrested them as we did at Syracuse. There were nine of them, I believe, bit the dust. One Supervisor of a road district—an officer sworn to do his duty, one of which is to arrest any violator of the law—got on the wrong side of the fence, and now he is on the wrong side of the grates at Warsaw, and we intend

to keep him there until he has reformed. We made some arrests in Marshall County, at Maxinkuckee. It takes three or four good substantial citizens to swear as hard as one of those men can swear, and when you get five or six of them you don't stand any chance. I had a letter from the Prosecuting Attorney of Marshall County, in which he stated the most flat-footed perjury that he had ever known was brought out in the trial. Three parties were arrested there for spearing. My detective and his assistant watched them and heard them talking about going fishing, and watched them get into the boat with their spears, and watched them spear several fish, and watched them get out of the boat and start home with them. When they were arrested they proved that not only the three but one or two others, with other friends, were eight or ten miles away playing cards all night in a saloon and drinking beer. In addition to this they brought a man there who swore that he sold them the fish the day before; and if anything else was necessary to be sworn to they were ready to do it. That is the character of the folks I have to contend with. I have this much to say, I am sure that they are badly scared and are on the run, and they have gotten so now that they see a man in every bush, and every man that comes along the road is a detective and is after them, and we have them so badly scared that they are afraid to commit any more depredations.

I have found in regard to fish ladders that all the lakes in Northern Indiana have a common outlet in the Elkhart and St. Joseph rivers. The St. Joseph river passes Elkhart, Mishawauka and South Bend, and goes over a twelve foot dam at Niles, Michigan, and goes to the lake, and when the fish ran down to Lake Michigan, there was no way for them to get back unless a fish ladder was put in at Niles. I corresponded with the Fish Commissioner of the State of Michigan, and tried to have him put in a ladder there, but from some fault in their organization nobody had the power to authorize it; at least there was no disposition to do it; consequently I could not make any headway. I went to the owners of the water power and employed my persuasive powers to the best of my ability to induce them to put in a fish ladder, and they finally acceded to my request, and have put a ladder there at a cost of something over a hundred dollars to themselves, and made us a present of it, and now, for the first time, perhaps, in twenty-five years, any fish who has any tramping ideas about him may start on a tramp and go up from the lakes by Niles, South Bend, Mishawauka and Elkhart, and on up until he gets into the northeastern corner of Steuben County, where he can go into Ohio or Michigan. I think that is one of the most important things I have been able to accomplish, and I feel more satisfaction from that than from anything else I have done. I think that I have northern Indiana largely supplied with fish ladders. Where they are not put in it is owing to dereliction on the part of the Township Trustees. I am prosecuting a man in Cass County for neglecting to do his duty. We shall get an order of court against him and compel him to do it or have him fined for contempt of court, and in some other cases I shall have to pursue the same course.

Another important matter in connection with my operations: I found at Kokomo that the refuse running from the straw-board factory into Wild Cat Creek—a handsome little creek—was killing the fish for twenty miles down. At Stone-breaker's Mills, fifteen miles below, I inquired of the proprietor there and he told

me that previous to that time, and one time he mentioned particularly, there were at least two car loads of dead fish in his pond, and that he could not run his mill on account of the dead fish in the race, which was a regular slaughter pen. A County Commissioner owning a farm below that mill complained that the cattle that stood in the creek, in the shade, in the summer, had been affected by poisonous matter running into the creek from the straw-board factory. I went down and visited the creek, going up one side and down the other. I told him I thought it my duty to prevent the destruction of fish, and asked for help, and succeeded in raising money to make the prosecution, and the citizens employed Judge Pollock—a prominent man—to assist the prosecuting attorney, and at the last session of the grand jury we obtained six indictments against this establishment for maintaining a nuisance, and in the course of the next ten days the indicted will come to trial, and we will settle a very important point, which will have its effect at Noblesville, Mexico, Anderson and at one or two other points, and particularly, I might say at Wabash, where the United States Combined Match Factory have made their plant and will be running their refuse into the Wabash; therefore, the result of this trial at Kokomo is going to be of great importance as a precedent in establishing the fact whether we can or not control the running of the refuse matter into the creeks and poisoning them. If Anderson with its new straw-board factory runs its refuse into White River, then it is "good-bye fish" from Anderson to the Ohio River. I look upon it as a very important matter, and if we succeed it will be a great accomplishment, and one to be proud of. This is in brief some of the things I have done and am trying to do. I am not discouraged by any means. I think the outlook now much more promising than when I commenced; I have got the "hang of the school house" a little better, and I think I can make my operations more effective. I feel as much interest and more than ever to make a success.

The President. I see the committee is ready to report; we will hear from them.

Col. Lilly. Your committee on organization beg leave to report that the Association be called the INDIANA FISH AND GAME ASSOCIATION. To be organized as follows:

Officers: President, Secretary and Treasurer, one Vice-President in each Congressional District and an Executive Committee of five. The President of the Association to be chairman of the Executive Committee *ex-officio*.

The objects of the Association to be the preservation and propagation of food fishes, and the protection of the game of the State of Indiana. Membership fee to be two dollars, annual dues one dollar.

This Association shall foster and encourage the formation of local associations in all portions of the State for the same object. Members of such associations to be eligible to membership in this Association.

The constitution and by-laws for the government of this Association shall be prepared by the Executive Committee and submitted at the next meeting of the Association.

The President. You have heard the report of the committee; what is your pleasure?

Mr. Jameson. I move that the report of the committee be adopted. Carried.

Mr. Applegate. I think the first thing in order would be the election of a president of this organization. I suppose there will be no two opinions on that subject as to who will be president, and I will therefore take it upon myself to nominate Col. Dennis; all in favor of the election of Col. Dennis as President of this Association will signify by saying aye. Carried.

Col. Dennis. I thank you for the honor conferred upon me. If I can not promise to do more than I have done, I will promise I will not do any less.

The next thing in order will be the election of a Secretary, to be Secretary and Treasurer according to the terms of the report.

Mr. Butler. I name Jesse H. Blair, of Indianapolis.

On motion Jesse H. Blair was elected Secretary and Treasurer.

Dr. Metcalf. I suggest Col. Lilly as one member of the Executive Committee.

Col. Lilly. I wish to say a word first; the committee in reporting this preamble and arrangement for organization considered in making that committee of five; with the President of the Association as Chairman *ex-officio*, and the committee would be selected with a view of being able to get a quorum at almost any time; that two of the members of the committee might be at a distance; we thought it best to scatter them about the State as much as possible, but that the committee be selected with a view of getting three members together at almost any time to perform such duties as the by-laws may hereafter prescribe.

The following gentlemen were selected as members of the Executive Committee:

D. M. Butler, city; Eli Lilly, city; J. P. Applegate, New Albany; Thomas F. Davidson, Crawfordsville.

The following gentlemen were enrolled as members of the State Association:

R. C. Smith, Crawfordsville, Ind.; B. K. Elliott, Indianapolis; W. P. Fishback, Indianapolis; H. E. Smith, Indianapolis; W. R. Pleake, Greensburg, Ind.; C. N. Metcalf, Indianapolis; B. Borders, Winamac; Willis C. Vajen, Indianapolis; Elisha Howland, Howland, Ind.; J. P. Applegate, New Albany, Ind.; H. B. Jacobs, Indianapolis; J. E. Beyer, Warsaw, Ind.; Ignatius Brown, Indianapolis; G. A. Millard, Indianapolis; Asher Wert, Crawfordsville, Ind.; W. H. Dye, Philadelphia, Ind.; Jesse H. Blair, Indianapolis; Eli Lilly, Indianapolis; W. T. Dennis, Richmond, Ind.; C. A. Howland, Howland, Ind.; A. H. Nordyke, Indianapolis; Charles E. Nordyke, Indianapolis; F. M. Buker, Rome City, Ind.; Cicero Sims, Frankfort, Ind.; W. E. Griffin, Indianapolis; B. W. Evermann, Terre Haute; O. F. Dewey, Goshen, Ind.; W. C. Bond, Carmel, Ind.; Lew Hanford, Indianapolis; B. H. Lucas, Indianapolis; G. P. McDougall, Indianapolis; J. L. Manlove, Milton, Ind.; W. H. Clark, Indianapolis; J. E. Greer, Julietta, Ind.; Fielding Beeler, Indianapolis; Henry Pollard, Zionsville, Ind.; Alex. C. Jameson, Indianapolis; D. C. Gill, Indianapolis; Robert M. Fishback, Indianapolis; E. S. Elder, Indianapolis; W. H. Sands, Rushville, Ind.; P. G. C. Hunt, Indianapolis; John M. Stevens, Rushville, Ind.; D. S. Jordan, Bloomington, Ind.; Frederick Baggs, Indianapolis; O. P. Jenkins, Greencastle, Ind.; Joseph Gilbert, Terre Haute; S. Everett Carter, Seymour, Ind.; Austin B. Prather, Indianapolis; M. D. Butler, Indianapolis; W. A. Rhodes, Indianapolis; George F. McGinnis, Indianapolis.

Dr. Hunt. The Executive Committee can select these Vice-Presidents to better advantage, and select men that will look after the interests for which this organization is brought about, better than we can here in a town meeting, and I therefore move that this matter of Vice-Presidents be left to the Executive Committee. Carried.

Col. Lilly. It is understood we are in a formative process. We are an organization as far as we have gone. Certain other things are to be done to make it complete. We have resolved ourselves into an Association, the membership consisting of those who have signed the register. We have resolved that this Association be formed for certain purposes, and have elected officers to perform certain duties; we are working under certain by-laws to be reported hereafter. I think we are a working body as far as we have gone. It will take time to complete it.

The President. It would be proper to suggest a day in the future when the Executive Committee should report.

Mr. Jameson. I think when we adjourn we should adjourn to some particular day in the future.

Mr. Applegate. I think that would be a better plan. It would go out that we were to meet at a definite time, and it would be a very considerable advertisement of the time of the meeting, and the Executive Committee have but little to do to prepare. I think when we get together it would not take more than an hour or two to discharge all the duties devolving upon us, and we could report at any time this meeting sees fit to adjourn to.

Dr. Hunt. Time should be given for the Executive Committee to make their selections of Vice-Presidents. I think sixty days would be long enough for the Executive Committee to make their selections of the Vice-Presidents and receive notice of their acceptance of the office.

Mr. Jameson. I move that when we adjourn we adjourn to meet in this place the last Thursday of January next. Carried.

Mr. Pleake. I have a resolution which I would like to read to the members:

Resolved, by the members of the Indiana Fish and Game Association, That Col. W. T. Dennis, Fish Commissioner of Indiana, has our thanks for his efficient work so far, and that the members of this organization will use their earnest endeavors to establish local protection associations and render our Fish Commissioner substantial aid in the discharge of his duties. Adopted.

On motion the meeting adjourned.

CANE GROWERS.

The Eighth Annual Convention of the Indiana Cane Growers' Association convened January 14, 1890, at 1 o'clock P. M. in the Lecture Room of the State Board of Agriculture, State House, with President Chapman in the chair. The roll call showed present: John Richmond, Daleville, Ind.; C. B. Nicholson, Clayton, Ind.; E. W. Tomlinson, Clermont, Ind.; Edwin Berry, Westfield, Ind.; W. A. Pearce, Strawns, Ind.; D. M. McCorkle, Richland, Ind.; A. P. Cleland, Macy, Ind.; S. P. Castle, Urbana, Ohio; W. F. Leitzman, Clayton, Ind.; D. H. Talbert, Spiceland, Ind.; E. S. Pope, Indianapolis, Ind.; S. W. Tilson, Franklin, Ind.; A. S. Chapman, Madison, Ind.; J. B. Long, Orange, Ind., and W. B. Denney, Cicero, Ind.

Pursuant to programme, President Chapman delivered his

ANNUAL ADDRESS.

Gentlemen of the Convention—Brothers in the good work of propagating and furthering a large industry in this great State of Indiana—the Sorghum Industry—it is with pride and pleasure that I once more stand before you and review the year that has intervened since we last met, and mingle among you, shaking hands with that brotherly feeling and recognizing in return that good will from all that is born only of Christian brethren, in mutual interests and a unanimous wish to work to a common end—the aims of our association. In my review I will but briefly touch upon important events, knowing full well that papers will be read before our meeting by members thoroughly competent and practical in their views, and the practical discussion that will follow, will not only cover the points upon which I may briefly touch, but will be of more practical value than any address your chairman can entertain you with.

The season of 1889, just passed has been one fraught with unfavorable conditions to the sorghum industry. I say fraught with unfavorable conditions yet the industry has really advanced more in these past twelve months than any year since the organization of our association, the only independent association of the kind now existing, out of the many born, even surviving the great National Association, that was headed by men high in power, and great in intellectual resources. A short five years ago, when I first met with you, the very name, sorghum, was a stench in the nostrils of thousands of good people in this great country. Through the efforts of this and kindred associations, spreading abroad the knowledge of how

to make good sorghum syrup and condemning the old methods of ruining good juice by making black strap of it; sorghum to-day, when obtained pure, is the best table syrup we have; and so popular has it become among the very people that once detested it, that it is imitated on every occasion, over half that is sold as sorghum being a base imitation.

Through the wise efforts made at our convention last year, when we secured honest wholesale merchants to test and pronounce on our samples, giving their testimony as to its good quality, and the prevailing base adulteration of pretended standard brands of so-called sorghum, the people have learned the true from the spurious article.

Thus has our association been a great public benefactor and educator, not only benefiting the sorghum growers and manufacturers, by raising the standard of their goods, but educating the people to appreciate good sorghum and to know and understand that the majority of the goods on the market called sorghum is no sorghum at all, but a vile imitation of that which it professes to be. And while our association has accomplished all this, its published proceedings has taught the many thousands of syrup makers the better how to make good syrup.

We said that while the past year was fraught with disaster to the industry yet it has advanced more than any year since the organization of our association. During the past year there has been but a short acreage grown in this State, but what there was has been given the care it deserved and a good article has been made, which has both raised the standard and price in the State, two great desiderata. In Kansas, where thousands of dollars have been spent in trying to make sugar this year, the season was unfavorable and the crop a consequent saccharine failure, causing a great loss to many of the operators. Last year's success caused many capitalists to rush in and invest their money in something they were absolutely ignorant of. Their first year's work was but an experiment anyhow; the failure of the cane to produce sugar, made their experiment a financial failure. But these gentlemen have their money invested and the experiments the first season have discovered to them rocks they must avoid in the future. It has taught them that greater capital must be invested, and work done on a larger scale to make sugar making a success. This capital will be forthcoming, is already promised, and the consequence will be that the season of 1890 will open out with a large number of fully equipped sugar factories, and, if the season should prove favorable, a large amount of sugar will be made, and made at a profit. About 1,500,000 pounds of sugar have been made in that State the past year, there is no judging the amount that will be made next season, if favorable. The Fort Scott Factory, the oldest in the State had almost an entire failure in their crop, owing to the cane being drowned out, yet they made 350,000 pounds of sugar and 100,000 gallons of molasses, and is one of the small factories of the State. This factory will make a small profit, notwithstanding the crop failure. None of the new factories were ready when the crop was ripe.

Judge Parkinson, the leading spirit there, says: "More factories will be built this year, and some of those erected last year enlarged. Among those in the best

position to know and judge there are the strongest convictions of success. Those who doubt successful sugar making are doomed to disappointment.

"New factories will go up as fast as skilled men can be trained for the work. The danger is that skill and proper caution will be more difficult to obtain and control than capital to build new works."

"Considerable Kansas sugar has been shipped to New Orleans for refining, paying freight both ways and costs and profits of the refinery. A refinery will be built in Kansas next year. It will have connected with it a central factory with not less than a half dozen auxilliary plants or diffusion batteries, where the juice of the cane will be secured and pumped through pipe lines to the central works. After the sugar making process is over the refining part will be used in refining sugar from other factories.

"A glucose works for putting the cane seed into marketable shape will also be erected. It is safe to predict that the factories built this year will at least double the output of sugar next, and that Kansas will produce 10,000,000 pounds of marketable sugar from sorghum in 1890."

Thus it is easily seen, ladies and gentlemen, that the failures of the past are but a guidance to the future, and will hasten the final perfection of the sorghum sugar industry.

In Indiana we await that result patiently, and in the meantime are learning to produce the best syrup in the world, and are making money on our product while we are learning. It has been said that sorghum cane sugar can not be made profitable in our State. This has not been proven, and we only await the favorable opportunity to test the accuracy or inaccuracy of the statement. In the meantime we will continue to improve our syrups.

This will be the main question for the consideration of the convention, and I would recommend that we devote our time to the discussion of all questions that will lead to that end.

Let us consider the best varieties of cane to raise, the best methods of planting, cultivating and harvesting, and, finally, the most approved method of manufacturing our syrup, which is really the most important question of all, for it were better to make 100 gallons of fine syrup than 1,000 of an inferior article, which is not only a drag on the market, but a drawback to the good name of sorghum.

It is to be hoped that every member will take part in the discussions, adding his mite to the general fund of knowledge, that all may return to their homes profited by their attendance at this meeting, and that the world, who will read the reports of our proceedings, and profiting by our deliberations, may say, the Cane Grower's Association has a great mission to fill, and they are creditably filling it.

Let each and every one add to the proceedings of this meeting the best he has. If you want to know something ask it, your question will draw out an answer that all will benefit by.

In conclusion, ladies and gentlemen, let me thank you, one and all, for the continued courtesies shown me since I have had the honor of first meeting with you, the pleasant memories of which will be as lasting as life itself.

Thanking you for your attention, I now wish you all wisdom in your deliberations, a successful meeting, future prosperity to our association and a happy New Year, showered throughout with the blessings of an ever bountiful and merciful God.

Mr. Long moved that the association tender its thanks to the President for his address, and his arduous efforts for the good of the association.

Mr. Tilson. Kansas will soon make a success of sugar, and Indiana should also.

Mr. Talbert. Congress may remove the tariff on sugar to the detriment of the cane growers of Indiana.

Mr. Long. The making of syrup is the most beneficial to this meeting, and therefore the sugar question should be let alone.

Mr. Leitzman. I agree in the most part with Mr. Long, for if the tariff be removed, sugar would be used in the place of sorghum syrup.

The President appointed Edwin Berry, A. P. Cleland and John Richmond, Committee on Nominations.

Mr. Leitzman. I have worked for sixteen years, and never sold a gallon of syrup for baking purposes, and think we had better keep our product out of the city markets.

Mr. Long agreed with the statement of Mr. Leitzman.

AWARDING COMMITTEE.

Mr. Talbert. I favor going out of the organization for a committee on awards.

President. I think we are capable of deciding among ourselves.

Mr. Tilson. I am of the opinion that it would be very embarrassing for a member to pass on his own sample.

A vote was taken to decide if the committee should be appointed by the President from members present, and E. W. Tomlinson, E. S. Pope and D. M. McCorkle was appointed to select a committee of grocers from the city to pass on samples.

The Committee on Officers reported the following names for the ensuing year: President, W. F. Leitzman; Vice-President, N. B. Dewey; Secretary, A. S. Chapman; Treasurer, D. A. Talbert. Report received and concurred in.

The chairman of the committee said the reason for making A. S. Chapman Secretary, was that he was editor of the State organ of the Association, the *Sorghum Growers' Guide*, and that as Secretary he could render the Association great benefit, he having proven this when Secretary before. In fact, he had proven the best Secretary the Association had ever had. Hence, the committee's reason for changing him from President to Secretary. Secretary elect Chapman stated he had no mortgage on any office in the Association, and was ready to serve where the best interests of the Association demanded. He felt proud of the committee's recommendation.

On motion a Committee on Resolutions were appointed, consisting of D. M. McCorkle, S. W. Tilson and A. S. Chapman. Adulterations, tariff, etc., were referred to this committee.

Mr. A. P. Cleland read the following paper on

"VARIETY OF CANES."*

I will now try to give you a description of a few of our leading varieties of sorghum. The Amber cane has proven to be one of the best because of its purity and sweetness. It will make more syrup to the ton than any other variety in Northern Indiana. The Honey Dew cane has more peculiarities than any variety that I have ever had anything to do with. The juice has more acid of some kind which is hard to neutralize with chemicals. It will finish into thick molasses at 220 degrees by the thermometer. It will boil like soap, and when cold it is of a whitish yellow color, and tastes like it had chalk in it, and some seasons when fully matured, it will make as nice syrup as the Amber cane. When the syrup is mushy like it had corn meal in it, it will do best to mill it with the juice of the Amber cane, and I have no trouble with it then. It is a profitable variety to raise for the seed, yielding as high as 50 bushels to the acre; the seed is almost as white as snow, yielding about 100 to 150 gallons of syrup per acre.

Price's Hybrid cane is a good variety, and is more like the Amber, only the stalks are softer, yielding its juice easily with less impurities, making a fine article of syrup. The seed heads are almost like Amber, it is a cross between the Amber and the Liberian.

Lynk's Hybrid is a good variety to make sugar, but it will not mature well in this State. It is a late variety, as it failed to show seed heads the past season.

The Early Orange is a good variety when you can get it to mature, which happens about two seasons out of five. It is a large yielder of good quality.

Early Tennessee is earlier than the Amber, but it is more liable to blow down, and the juice seldom tests more than 6 B., and makes a dark syrup. The seed is very hard to clean, and does not prove to be very profitable to raise.

Early York is the earliest variety known, but the yield is very small. The stalks only have about five or six joints, and the juice is not very sweet.

I planted the following named varieties the past season: Amber, Early York, Siberian, Honey Dew, Orange, Chinese, Price's Hybrid, Red Liberian, and Link's Hybrid. As we have had a very unfavorable season, it will cut my essay short. I planted in plats of fifty hills of each variety, except the Amber. The other eight varieties altogether made six gallons of molasses. My Amber made forty gallons per acre.

Red Liberian and Link's Hybrid did not show any heads. The Amber cane was about six weeks coming up after planting. Price's Hybrid done as well as the Amber. Well, I am about through experimenting with different varieties, unless I can get some new varieties, as I can not recommend anything but the Amber and Price's Hybrid, and the latter may prove unprofitable in other seasons.

But I can say, although we had a poor crop, I made a better article of syrup than last season. The cane did not yield as much juice, and it was not quite so rich in sweetness, but the only way I can account for it is the method of using chemicals.

*NOTE.—Mr. Cleland lives in Miami County, and his remarks and varieties apply to the latitude of Northern Indiana. Most of these varieties do well in Central Indiana.

W. F. Leitzman read the following paper on

"SORGHUM CULTURE."

Good seed of the varieties best adapted to the locality is the first requisite to success in cultivating any of our field or garden crops. The success or failure of a crop always largely depends upon the quality of the seed. Nowhere in the entire vegetable kingdom is the effects of good or bad seed more manifest than in the sorghum plant.

"Good seed" does not only mean seed capable of producing strong and healthy plants, but more than this; good seed means that which has been bred up to fixed types of excellence by long continued selection of seed from the finest plants of the best varieties. When such seed can be procured it will be found more profitable to pay even a high price for it than to take common or poor seed as a gift. When seed has to be bought it should be procured from reliable cane growers, who are conversant with all the best varieties and best methods of improvement, and who can vouch for the purity and high quality of their seed. If these desirable qualities are maintained through the succeeding crops it will be necessary to continue the same course of selection that brought about the improvement.

In the selection of cane seed, a fair stock of common sense, a knowledge of what is required, and an abundant supply of patience are the necessary qualifications. Seed should be selected only from the individual canes showing the fewest faults of form and possessing the sweetest juice. Avoid all seed from canes showing a tendency to tiller on the ground or to sucker at the joints; also, all large and fine looking seed heads, no matter how nice the canes may be. In selecting canes possessing the sweetest juice, it will be observed that, almost without exception, the seed heads will be far below the average in size and weight.

In the non-saccharine varieties of sorghum, common among which are the broom corn and the Doura or Guinea corn, it will be noticed that the seed heads are much larger and heavier than in the best saccharine varieties. By these examples nature would teach us that a large production of seed and a good saccharine juice are incompatible and can not be produced by the same plant.

The universal custom is to select the largest and finest seed heads, regardless of qualities of juice or any other desirable characteristics. This practice is better calculated to improve the yield of seed than the yield of molasses. Care should be taken to prevent mixing or crossing of varieties, as there is a well grounded prejudice against "mixed" varieties of sorghum. Varieties blooming at the same time will mix if planted near together. The non-saccharine varieties should never be planted near enough to mix, as such crops are worthless.

The amount of seed required to plant an acre will depend upon the manner of planting. The number of seeds in a pound of Early Amber or Early Orange cane seed is nearly equal, and will average about 21,000. If planted in checks three and a half feet each way, about two pounds will be required, which will give about eleven seeds to each hill. If drilling is practiced, and the rows are the same width, four pounds will give two seeds to every four inches of row, which would be about right if evenly dropped, but as most drills will drop unequal numbers of seeds eight pounds per acre would be nearer the proper quantity.

Good soil is next in importance to good seed. A fair crop of cane can be grown on any land that will produce a good crop of corn. The best results, however, can only be expected from soils best adapted to all its wants. The soil that seems to give the best results is a rich, warm, sandy loam, resting on a sandy or gravelly sub-soil. Such land ought to yield from two to three hundred gallons of molasses per acre. The next best soil is a clay loam, well stored with available plant food, but free from all fresh rank animal manure. The worst soil is black, mucky bottom, or peaty swamp land. Such land, if well drained, will produce a large tonnage of fine looking cane, but inferior in quality.

Preparation of the ground for a crop of sorghum cane is of vastly more importance than is generally supposed. Should the ground be imperfectly prepared, planting can not be well done, and will result in a bad stand and a short crop. The proper time and depth that ground should be plowed, will depend on the quality of soil, and the kind of crop it last produced. Sod ground—either clover or blue grass—if not on a heavy, tenacious clay soil, ought to be plowed the preceding fall, or early winter. Ground easily compacted by rains, should not be plowed until near time of planting. Deep plowing is very desirable on all good, deep soils, but on clay lands, where the soil is shallow, it would be ruinous.

After the plowing is well done, and the proper time for planting arrives, the ground being in good condition for working, it should be pulverized as deep as possible without disturbing sod, grass or weed seed, that may have been turned under by the plow. The ground ought to be put in condition suitable for the most delicate garden vegetables, and made quite smooth. The common spike harrow, the disk harrow and drag, are good implements for pulverizing the soil. No implement should be used in this work that will disturb the sod, or seeds of noxious weeds that lie buried beneath the furrows.

Planting should follow as quickly as possible after the ground is prepared. This is essential, as the seed should be deposited in fresh, moist earth, that it may germinate quickly, and get an even start with the weeds. The proper depth to plant will vary from half an inch or less, on heavy clay, to two or more inches on light, loose, sandy soils. Seed should be planted at a uniform depth to insure its coming up more evenly. This may be done much easier and more satisfactory with machinery than by hand. For planting small crops, if the land is not too foul, a good garden seed drill is all that could be desired. But for field planting, something more speedy and less laborious is needed. This is found in the corn planter and wheat drill. In field culture, when it is desirable to plant in drills, a good wheat drill, drawn by two steady horses, will do good work. All the holes leading to the sprouts must be stopped, except two, which should be the right distance apart for the rows. It should run quite shallow, so as to barely cover the seed. But for planting in check rows, a two-horse corn-planter gives the best results, depositing the seed at a uniform depth, and the wheels firming the ground about the seed, causes it to germinate quicker and grow more rapidly, thus getting a better start of the weeds. If the planter has broom corn plates, they will answer; if not, then take two of the corn plates, place them on a level surface, and fill all the holes with melted lead. The leads should then be carefully hammered to prevent dropping out. Holes must be drilled in the center of the leads the proper size to hold

the required number of seeds to be dropped. The holes should be larger at the bottom than at the top, to prevent clogging. Seed enough should be planted to insure a good stand without replanting, as it is very desirable that all the cane should ripen at the same time. It is much better to thin than to replant. Good soil will produce a good stalk every four inches of row if drilled, if planted in checks from four to eight stalks may be grown to the hill.

Cultivation should begin quite early; ordinarily, as soon as the plants can be seen along the rows, but in case a heavy rain should fall soon after planting, and cause a hard crust to form on the surface of the soil, the tiny plants will not be able to come through unless the crust be broken up. This can readily be done by the free use of a light harrow, having small steel teeth. A Thomas smoothing harrow is just the thing for this purpose. A good home-made implement for destroying weeds in young cane, is made by attaching scrapers to a common corn cultivator. The scrapers are made by taking two pieces of good hard wood board, one by six, sixteen inches long. Bevel the rear lower edges like the point of a chisel; face the front with a piece of old saw blade, or anything that will answer the purpose, letting it extend down half or three-fourths of an inch below the wood; remove the shovels from the cultivator feet, and in their places fasten the scrapers securely with bolts, and the implement will be ready for use.

Where the planting has been done with a drill or corn-planter, and no zig-zags in the rows, this implement in the hands of a careful man and drawn by a slow, steady team, will do good and rapid work, almost completely clearing the grass and weeds from a space a foot wide on each side of the rows, and leaving them on the surface of the ground near the middle of the row, in a most favorable condition to perish.

Early cultivation should be quite shallow, for reasons already given, but later on, should the soil beneath the surface become compacted, it will be necessary to stir it up. This may be done with the bull-tongue plows, or with spring-tooth cultivators. This should be done before the cane is over a foot high. After this, all further culture should be confined to the surface. No implement should be used that will run deep enough to disturb the roots of the cane, which would tend to retard its growth, and increase the production of suckers. All that is necessary is to prevent a growth of weeds and grass, and keep the surface loose. For this purpose I have found nothing equal to common corn cultivators with harrow attachments, which can be bought of almost any implement dealer for about \$3 per set. When the cane is about three feet high, the ground being mellow and free from weeds, all cultivation should cease, as further cultivation would only tend to retard the growth of the cane by destroying the numerous small roots which lie near the surface. Late cultivation not only checks the growth of the cane, but induces suckering, not only at the roots, but at the joints as well. The evil resulting from suckers can never be remedied, even by their removal, and every precaution should be taken to prevent their production.

The cane will now begin to shade the ground so as to keep the weeds in check, and nothing more will be required until the time for harvesting arrives, which will be known by the seed beginning to harden so as to be difficult to crush with the thumb and finger.

Mr. Tilson submitted the following paper :

"THE BEST MODE OF HANDLING CANE."

That is delivering it in the yard and to the mill. I had thought all through the year that there was not enough in the subject to justify the effort, but on more mature thought I have concluded to try, and see what I can get out of it. If I am not able to get anything out of the subject proper, I may, by pecking around the edges in my small way be able to say something that will have a tendency to advance the interests of the sorghum industry in our State.

The more important part of my subject is the condition in which cane is delivered in the yard, as no man can make first-class molasses by any process with which I am acquainted from sour cane. Neither is the best results obtained from green cane. But I prefer to have cane a little green, rather than sour, for some of as fair syrup as I have ever made was made from green cane. Yet green cane will not make as much, neither will it be as sweet. The proper condition in which to deliver cane in the yard is when it is ripe. Well, how may I know when it is ripe? How do you know when your wheat is ripe? You don't wait until the grain will crack between your teeth, but you will cut it when the average of it will mash between your finger and thumb. So it is with cane. You want to cut it when it is in the same condition as wheat when it will do to cut. Every day it stands after that increases your chance for bad molasses; because, from that day on until it is cut, the amount of sugar decreases, and the amount of gum increases. And, as the amount of gum increases the liabilities to stick to the pan increases. The more gum, the worse it will stick; and if it sticks, it will burn and there is no help for it that I know of. Again, if you want to deliver your cane in the yard in proper condition, don't plant it on black land, on an old feed lot, around an old straw stack, or on manured land. If you do, the chances are that you will have bad cane, and consequently bad molasses; but plant your cane on yellow, sandy soil, such as we have in the White River valley from Indianapolis to Waverly, the Blue River valley, or any light sandy soil, will make good molasses if properly handled. Again, in order to deliver cane in the yard in a proper condition, it must be stripped clean, topped short, and loaded on your wagon in a workman-like manner, not gathered up and pitched at the wagon like piling brush, but place it on the wagon straight and even, and as much as your team will pull. Some men fool away a great deal of time hauling small loads. The average load will make about twenty gallons, although I had one load brought to my yard that made thirty-two gallons, but the man that brought it was sent to the hospital for the insane in less than two weeks, and he is there yet. Don't pile your cane flat on the ground—put some rails under it in order to let the air circulate under it; place it straight and even. I can always tell what kind of a farmer a man is by the way he unloads his cane. I think of one man just now that came to my yard. He had four or five loads. When he came with the first load I went to him, showed him where to unload, got him started to unloading all right, and went back to my work. After a few minutes I looked over that way, and what do you think he was doing? He was standing on top of his big load throwing the cane as far toward the pile as he could. Well, I went around to him, and explained how he was breaking his

cane to pieces, and how liable it was to sour if mashed up that way, and how it was tangled and how much more we would be bound to break it up in getting it to the mill. I even went off and got a broad plank and placed it on the coupling of his wagon, with one end on the ground so that he could walk up and down and pile his cane off nicely. I got him started again, and went back to my work, and it was not five minutes until he was on top of the wagon throwing it off as before. Now what do you suppose I did then? I got so everlasting mad that I—well, I just simply went off and let him alone. I had one load come to my factory standing on end in the wagon bed, but that plan will not work well unless the cane is very short. Some have hauled on hay frames and wood beds, but about the best way is to take a common thirty bushel bed, take the hind gate out. Commencing behind, let the cane stick out from twelve to fifteen inches. Fill up above the bed then fill up the front end. Put up pieces of boards and you can build up the load as high as you please. As regards delivering the cane to the mill, I don't know that I can say anything that will be of any interest to you. We do it the good old way, as the darkie said, "de ole way and de best way;" that is by main strength pick it up and carry it to the mill.

DISCUSSION.

Mr. Nicholson. Orange is the best yielding cane. I favor Amber for early and Orange for late.

Mr. McCorkle. I have worked Amber and other varieties. I thought Amber did not all come up. I had the best success with the Early Orange.

Mr. Dewey. I made syrup from Early Orange this year that I worked before it headed out. I worked one-half acre of that and Amber, and made 150 gallons.

I made 300 gallons from one acre of Honduras. I think the cane Mr. Denny speaks of is Late Orange, as it proved late with me.

The President. It is desirable that we should raise early and late varieties, that our seasons may be as long as possible. With us we can raise Early Orange and a kind of Imphee cane, nearly like Orange, that grows ten or twelve feet high. I have worked Orange about the time the heads appeared with good results. The grub worm had got in it, and the season being late, I had to work it up. It made a fine syrup. When properly grown the Orange will produce one-third more than the Amber. In an old orchard I raised 244 gallons to the acre, leaving out the spots around the trees, but the greatest yield of Amber was 160 gallons per acre.

Mr. Nicholson. In selecting seed I go into the patch and pick out the largest heads. Do I understand that a large head indicates a lack of saccharine?

Mr. Tulbert. I fail in buying good seed, as those who sell it rake up everything to sell.

The President. The seed takes up the saccharine matter, and a large amount of seed and a rich juice can not be produced by the same plant. The stalk that grows high and into a small head is the sweet cane. By experience you can select it. You can breed up seed by intelligent selection. The same course that is pursued in animals must be pursued in cane seed—breed up. The poorest grade of anything is that raised without regard to selection.

Mr. Berry. We have greatly improved in making syrup, and if we can get good cane we can make good money. If we send off for seed we get poor seed. I would like to know where to get some good seed.

Mr. Cleland. I understand there is a house in this city that sells good seed.

Mr. Pope. Plant different varieties far apart to prevent mixing.

Mr. Berry. The first year there is no effect noticeable in mixing.

The President. It is necessary that varieties bloom at the same time to mix, the pollen causing the cross. The Orange and Amber will not mix if planted at the same time, as they bloom at different times.

Mr. Talbert. How long can cane be grown in the same ground?

Mr. Pope. I think ground improves under cane culture.

Mr. Dewey. I have planted cane on ground eleven years and the ground improved, but little manure being used. We leave blades and heads on the ground, and turn the stock in to eat them.

Mr. Pierce. My ground improved each year.

Mr. Berry. Dr. Wiley says that sorghum is not as hard on the ground as corn.

Mr. Tilson. There is something that comes from the soil that affects the syrup. I can't make good syrup from black soil.

Mr. Dewey. The farmer that cleans his ground is a good farmer. I think cane helps the soil. It derives 80 per cent. of its life from the air. The roots growing deep draw up the substance from the sub-soil.

Mr. McCorkle. I visited Mr. Field, who grows cane largely, and he says his ground that is black raises good sorghum.

Mr. Dewey. If we grow a crop of cane, sowing one bushel of seed to the acre, and turn over like clover, I think it will be better than clover.

Mr. Pope thought likewise.

The President. I don't think it best to turn in hogs to eat the seed, as there is too much tannic acid in the hulls; but they fertilize the ground when they run in the field. In digging a ditch one time we found cane roots three feet deep, and think they must have run much deeper. I think these roots go down into the subsoil and bring up fertilizing matter. Roots have been found seven feet deep. I don't think cane an exhaustive crop, but as much of the product as possible should be left on the ground. Only about 2 per cent. of the cane comes from the soil.

Mr. Nicholson. Molasses will gradually grow darker in the land.

Mr. Talbert. I get best results when cane lays on the ground three or four days. It defecates better than if worked up when first cut.

Mr. Tilson. If cane is green, let it lay awhile. If ripe, work it up at once.

Mr. McCorkle. This year I kept cane awhile, but it did not do so well.

Mr. Richmond. The best results are obtained when cane lays four or five days. This year I had a large lot on hand, and that last worked was best. The cane was a little green.

Mr. Dewey. I get better results when cane lays awhile; it don't grain so bad.

Mr. Talbert. It is not so liable to granulate when it lays, but making sugar requires it to be worked up at once.

The President. For syrup cut before ripe, depending on variety, and let lay before working, much depends on the condition of cane when cut.

Messrs. W. H. Pearce, D. H. Talbert and N. B. Denny were appointed a Committee on Programme.

The Treasurer's report was read and received.

Mr. McCorkle. I have a purchaser for the evaporator presented to the society by A. S. Chapman, but have not sold it yet. Expect to sell it next season.

Mr. Talbert. I move that we offer \$3, \$2 and \$1 for three best samples of sorghum. Motion concurred in.

Adjourned to 7 P. M.

EVENING SESSION.

The meeting was called to order by President Lietzman. Dr. Ryland T. Brown addressed the society on:

"HOW VEGETABLES PRODUCE SUGAR."

He said: Sugar belongs to a large and very interesting family of vegetable substances, in technical language known as the amylaceous group, because starch (*amidin*) appears to be the central figure of the group. They are all composed of three simple elements, and these always consist of six atoms of carbon, or some multiple of six, combined with oxygen and hydrogen in the proportion in which these exist in water, which is two atoms of the latter to one of the former. On this account they have been called *hydrates of carbon*. But this term is misleading, for it is not the compound molecule we call water that combines with carbon, but the simple elements of which water is composed, always preserving the proportion in which they exist in water. The lowest formula is that of gum, which is, carbon six, hydrogen ten, oxygen five. Starch doubles these figures. Of this large family there are eleven members that have a sweet taste, and on that account are called sugar. There are eight that are nearly tasteless, and we group them as gums. While these two groups differ so widely in their general appearance and physical properties, they closely resemble each other in their chemical composition, and in the living plant they are readily transformed into one another. This is by the magic influence of vegetable life, and chemistry has learned to imitate it only in part. It is from this group that nature draws the chief part of the material used as plant food in all forms of vegetation. They are all life-products, and consequently organic bodies; yet none of them are organized—they are the store from which vegetable life draws the material, which is used in every form of vegetable growth.

These three elements, to be available, must be in a fluid form—either a liquid or a gas. But carbon, the essential element in the compound, is not soluble in any known liquid, nor can it be fused or rendered gaseous by any amount of heat; but when heated in the open air it combines readily with oxygen, forming carbonic acid (*carbon di oxide*), which is a gas, mixing readily with the air, dissolving freely in water. The burning of wood or coal, or the decomposition of vegetable

matter by any other process, is the production of carbonic acid; and every shower of rain that falls washes a portion of it out of the air and into the earth. The decomposition of water furnishes the other elements, and if you will prepare the laboratory nature will make the sugar. She is a kind mother. If you comply with the laws under which she does the work, she does not require you to know how she does it. If she did, the wisest of us would starve.

The roots of plants are the organs of absorption by means of which water is supplied to feed the plant and to act as a circulating medium, carrying the prepared material to the different parts of the plant. The leaves collect from the air gaseous carbonic acid, and as all water exposed to the air holds carbonic acid in solution, there is no reason why that article of plant food contained in the absorbed water should not be used as plant food also; but both are decomposed in the cell structure of the leaf by the joint action of the life-force and sunlight, for neither alone can do the work. The elements, carbon, hydrogen and oxygen, thus liberated recombine, and the oxygen, when set free from the carbon, being redundant, is exhaled through the breathing pores of the leaf.

The new compound is gum, tinged with an albumenoid substance which gives the green color to the leaf and other recent growths. But in our latitude the rapid growing period of plants seldom exceeds six weeks, but the machinery of vegetable preparation is actively at work for twice that period in the preparation of seed in annual plants, and for the spring crop of leaves in deciduous trees. This material is deposited first as gum, which rapidly passes into the form of glucose, and from this into true sugar, and ultimately into the insoluble form of starch. The difference of these at each step will, perhaps, be better understood by those who do not read chemical formulæ, if given in per cent.

Discarding fractions this per cent. is—

Sugar—Carbon, 43; Hydrogen, 6; Oxygen, 51=100.

Glucose—Carbon, 36; Hydrogen, 7; Oxygen, 57=100.

Gum—Carbon, 41; Hydrogen, 7; Oxygen, 52=100.

Starch differs from gum only in its being granulated and insoluble. Boiling water breaks these granules and it becomes dextrin, which is really a form of gum.

In the work of the plant gum is first formed; this is afterward converted into glucose and finally into cane sugar. In 1857 I studied these transformations with some care, having planted a small lot of sorghum for experimental purposes. After it began to joint I made examination of the juice once a week and found gum, with only a trace of glucose, till the bloom began to appear, when glucose became abundant, but scarcely any true sugar till the seed began to form, and as the seed matured gum and glucose diminished rapidly and true sugar increased in like proportion, but at no time did it equal the joint amount of gum and glucose. These transformations were effected by changes in the oxygen and hydrogen (the elements of water), and as this side increased or diminished the relative per cent. of carbon followed the change. But it was observed that the formation of true sugar was hastened by bright, warm weather, and nearly arrested by a few cool, cloudy days. My conclusion then was, and yet is, that if we can ripen sorghum in August we can generally get a per cent. of sugar that will make its cultivation profitable.

But in the manufacture of sugar there is a constant liability to loss by the sugar reverting to the form of glucose. Even pure, refined sugar boiled constantly for twenty-four hours, will, or a large proportion of it, be reduced to glucose. I know of no source from which sugar can be profitably obtained in a domestic way, except the sugar maple. But sugar factories may make sugar from sorghum profitably even in Indiana.

A good article of syrup need not contain a large per cent. of crystalizable sugar. If it does, it will in time deposit the sugar to the injury of the syrup. Aim at a good article of syrup and you may make it a success without a very expensive outfit of apparatus.

A vote of thanks was tendered to the doctor for his excellent lecture.

Mr. Berry. Can there be a small machine made to make sugar by the diffusion process?

Dr. Brown. I don't think so at present. Mr. Wiley has put a feather in his cap by introducing diffusion. Thirty to forty per cent. is lost by crushing.

Mr. Berry. I sold all the syrup I had and tried to buy some in Indianapolis and could not get it. I think the wholesale men try to educate the people to the use of the adulterated article. We should raise more cane and supply the demand.

Mr. Tilson. All I make sells at home readily. Home market is the profitable market. Good goods will sell.

Mr. Cleland. Two years ago I was offered 25 cents and held at 35 cents. This year I sold at 50 cents, by the barrel.

A Member. I received 27 cents the first year. Next year I looked around and made a good trade. Have now customers in the city who give me 40 cents by the barrel. We must depend on local trade.

Mr. McCorkle. I retail by the gallon, make a home market and create a demand. Have sold to parties in Rushville who waited on me, they like it so well. Have but a little left.

Mr. Richmond. Sold to local customers in small lots ten years ago. This year could not supply the demand. Get up a reputation and you will be successful. I sell at 40 cents, and take back if not satisfactory, but none is brought back. I deliver it if near by.

The President. This is the only Cane Growers' Association left. I think this is through the efforts of Mr. Chapman, and think it but right to extend a vote of thanks.

On motion, a vote of thanks was tendered Secretary Chapman.

Mr. Talbert asked the nature of swing pipe, and how to use it.

Mr. Cleland. It is simply an inch pipe, with an elbow on it, put through the side of the tank near the bottom, and with the elbow inside of the tank, and extending to level of top of tank. As the juice level falls in the tank, the elbow is turned down to the same level, thus always drawing from the top of the juice. A jam-nut is put on the part that goes through side of tank, both inside and out, thus making it juice tight.

The President. It is not profitable to defecate with milk and eggs, as there is not enough eggs in the market. Any acid will destroy crystals.

Mr. Talbert. Who has had experience in defecating in batches? Is it a success?

The President. It is. I favor chemicals, and always pure. But all juices should not be treated alike, and must be understood, and those who know nothing about it will not succeed. All juices contain acids and must be neutralized, blue litmus turning purple. Too much lime makes it thin and black, but if not too much is used it won't taste bad. I use Huntington lime. I have made syrup as clear as maple by defecating.

Mr. Cleland. Would lose my custom if I quit chemicals. Where I live, cane is very acid, turning blue litmus red. I put in one-half to one pint sulphuric acid for fifty gallons of pure syrup, putting in lime last. Put in when tank is filling, the acid testing 3B, the lime 4B.

Adjourned.

SECOND DAY.

Mr. E. W. Tomlinson's paper was next read, as follows:

"THE FUTURE OF SORGHUM."

It seems a difficult matter to tell what is in the future for anything, especially when it possesses so many peculiarities as sorghum. We will try and compare a few facts of the past with the present, and let us make our own guess as to what is to be in the future. We have, perhaps, all read the early history of sorghum more than once, it being introduced into the United States about the year 1854. After the year 1861, the sorghum industry enjoyed a great boom for a few years.

During the war of the rebellion, the molasses sold for as high as one dollar and fifty cents per gallon, and the price received for making was fifty cents per gallon; but the war being over, and with the return of peace, there came a syrup upon the market made of tropical cane, which was more palatable than most of the sorghum syrup made in those days by the people with so little experience in the business. The public naturally took the more palatable, leaving poor sorghum to take a back seat. Its cultivation soon declined, and was soon forgotten by almost all, but by the determination to "hang on," of a few men scattered here and there, the industry was kept in existence; also, in the meantime, they making a little improvement now and then in the mode of manufacture until they finally are making a pretty good article of syrup, which begins to attract attention, and there begins a revival of the sorghum industry. During the year of 1877 or 1878, the Minnesota Early Amber Cane was introduced, and soon after the Early Orange, and other improved varieties. About this time the people conceived the idea of making sugar from the cane on an extensive scale, and have been experimenting since that time, most generally resulting in failure financially, but gaining some knowledge. Perhaps with improvements and new inventions of machinery for the performance of each and every part of the manufacture of sorghum, there will be a greater success for it in the future.

First, the mills for the extraction of the juice from the cane might be improved in the way of being made stronger, in order to grind the cane close enough to get the juice out in paying quantities. Also, it would make them more secure against breakage, which causes a great loss and annoyance to the operator, besides

the expense of getting his machine repaired. Evaporators should be made in a manner that they will boil in the most shallow body possible with the least possible danger of scorching, which is unquestionably the most rapid mode of evaporation, which insures the finest article of syrup. They should be made to facilitate the separation of the scum from the boiling juice, in the shortest possible time. As it goes, "cleanliness is next to Godliness," everything about the factory should be thoroughly cleaned each day in operation; and constantly kept so. Not even a particle of scum should be allowed to remain on the outside of the evaporator which would be liable to adhere to the clothing of the operator. It is said that every cloud has a silver lining; we have seen the dark cloud, now we are beginning to see the silver lining; and perhaps more of the silver lining will be visible than has ever been before. The manufacturers of machinery will make better machines, the manufacturers of syrup will make a better article, which will increase the demand; they will learn to economize more in the labor and expense of manufacture, which will enable them to realize better profits. The farmers will grow more cane for their own family use, which will be better for themselves as well as for the syrup manufacturers. Why should not sorghum be here to stay as a syrup-producer, at least? When we see so many nice samples on exhibition, how can we think otherwise, or be discouraged at the prospect of the future for sorghum?

On motion of Mr. Richmond, it was decided to instruct the Inspecting Committee on Samples to score upon the points as follows: 1. Color. 2. Flavor. 3. Density.

On motion of Mr. Talbert, it was decided to protect the Committee of Judges by entire exclusion of spectators from sample room.

The report of committee having charge of evaporator belonging to association, stated that the machine was still on hand, and the committee was continued, with the additional names of D. M. McCorkle, D. H. Talbert and I. B. Long.

On motion of Mr. Tilson, it was decided that the committee in charge of evaporator belonging to association, shall request Mr. Chapman to finish said machine and have it ready for shipment on or before June 1, 1890.

Committee on Programme for 1891, reported as follows:

PROGRAMME FOR 1891.

1. President's Address.
 2. Appointment of Committee and Nominations.
 3. Discussion of President's Address.
 4. Election of Officers.
 5. Appointment of Committee on Samples.
 6. Appointment of Committee on Resolutions.
 7. A. P. Cleland, paper on Defecation.
 8. My Experience the Past Season with Natural Gas, by D. H. Talbert.
 9. Whether Necessary to Cool, by D. M. McCorkle.
 10. Sugar from Sorghum—Future Prospect, by A. S. Chapman.
 11. Miscellaneous Business. Report of Committees. Awards of Premiums.
- Adjournment.

EVENING SESSION.

The Committee on Resolutions reported as follows:

WHEREAS, There is a large amount of the syrup sold in our markets under the name of sorghum that contains but little, if any, true sorghum, thereby defrauding those who manufacture true sorghum syrup by being unable to sell; the spurious article being sold at a much less price than the true article; therefore, be it

Resolved, That the Indiana Cane Growers request members of the Indiana Legislature and members of Congress, to present a bill to their respective bodies, making it unlawful to offer for sale any article purporting to be sorghum syrup other than the true and unadulterated article, and that all syrup known as mixed syrup or containing glucose or other adulterants, shall be sold under their true name.

D. M. McCORKLE.

S. W. TILSON.

A. S. CHAPMAN.

The report was adopted as read.

The report of the Committee on Samples was adopted, and accordingly first premium was awarded to Wm. Leitzman, second premium to C. B. Nicholson and third premium to Edwin Berry.

On motion of Mr. Nicholson, it was decided that three premiums be awarded next year on syrup, as follows: \$3, first; \$2, second, and \$1, third.

Considerable interesting discussion here took place concerning the merits of a number of evaporators.

A canvass of the membership resulted in ascertaining the total amount of syrup manufactured by members, the past season amounting to 31,852 gallons, apportioned as follows:

J. Richmond.	1,676
S. W. Tilson.	2,000
C. B. Nicholson	1,700
W. F. Leitzman	5,576
D. H. Talbert	3,400
A. P. Cleland	3,700
E. W. Tomlinson.	600
Wm. Pearce	700
W. B. Berry	3,800
Geo. Lowe.	1,500
D. M. McCorkle	600
S. P. Castle	1,800
N. B. Dewey.	2,000
— Merritt.	1,600

Total 31,852

Convention adjourned *sine die*.

INDIANA FLORISTS.

The fourth annual meeting of the Society of Indiana Florists met in the lecture room of the State Board of Agriculture, capitol building, Indianapolis, February 26, 1890, at 2 o'clock P. M., with President M. A. Hunt, of Terre Haute, in the chair. Immediately after convening he read his annual address as follows:

PRESIDENT'S ADDRESS.

Gentlemen of the Society of Indiana Florists:

For the fourth time in the history of this society, we have met to confer upon things pertaining to its growth and perpetuity.

Much has already been accomplished in awakening the public to the beauty and nobility of our calling, as well as to uniting us in the endeavor to so place our interests before them, that the greatest mutual good may be compassed.

A love for the beautiful in nature, has been implanted in every human breast, and they who can not see, or be moved by the refining influence which springs from association with it in any of its varied forms, must have departed widely from the state in which we are told man was originally made, when he was placed in the garden "to dress it, and to keep it."

Wherever we see a window of blooming plants, we feel very sure investigation would reveal the hand that cared for them as being the possessor of some, if not all, of what are known as the christian graces.

It is related of the police of Scotland Yard, that some years ago they were directed by their chief, to pass all houses where plants were growing, when in pursuit of law breakers. It was not long, however, before the criminal classes, becoming aware of the order, quickly nullified it by availing themselves of the immunity it brought.

We live in an age of ceaseless activity, and in our eager pursuit of wealth, position or fame, we must not loose sight of the fact that the line of demarkation, should be as clearly drawn in business, as is character; in fact it is indispensibly necessary, if there is to be any blending of the two.

While a homily on ethics is not the aim of the paper, it is well for us not to loose sight of the fact that the mere making of money is not all that life is worth living for.

I am well aware this statement will strike no sympathetic chord in the breast of the man who says "business is business," or who acts upon the advice said to have been given by a father to his son when he went out into the world for himself, "John, get money; honestly, if you can; but get it," and observation shows us this is the motto of too many of the business men of to-day. Are we an exception—do we in our business methods stand above suspicion.

I have no sympathy with the writer of an article in a recent number of the *American Florist*, in which he says: "We are in the business for making money, and not as public benefactors."

If we conduct our business honestly, giving full measure and straight goods, for a fair equivalent above the cost of production, we accomplish both; the purchaser receives not only full value for his expenditures, but the plant or flower, if it proves to be what it was represented, not only performs its natural function of pleasing, refining and elevating its possessor, but also strengthens him in the belief that the world is not all a fraud, that every one he deals with is not for himself first, last, and at all times.

The bank president, who ruins hundreds of poor depositors and crosses over to the Dominion to live at ease, we execrate. What, then, shall we say of the florist who takes full value from a hard-working woman desirous of having something bright and lasting to cheer the dreariness of her little home? What shall we call him when we hear him tell her the beautiful hybrid she buys will continue to bloom the year round? Or, if having seen or heard of the summer beauty of *Papa Gontier*, she pays him for one, but subsequently finds he has given her a *Bon Silene*. We call the banker a thief. Is this too harsh a name, do you say, to apply to us who deal only in beautiful things? Do we console ourselves by saying "She got a red rose anyway, and one is as good for her as another—she will never know the difference?"

It is said a florist doing a large catalogue trade was remonstrated with for imposing upon and deceiving the public, as he was in the habit of doing, the friend claiming it would eventually result in his total loss of trade. He is said to have replied, "A new crop of fools are born every year."

Is it manly to take advantage of ignorance or credulity? The wholesale dealer dares not deliver an inferior article, or one untrue to name, for the reason he is dealing with his peers, and self-interest alone will make him honest. Is this the highest motive by which we are governed? Is there not a moral question involved, and one to which we should give heed if we desire to build within ourselves characters that shall command the confidence and respect of our fellow men? We admire pluck, energy or perseverance so necessary to success in any business, but especially so when conducted on principles of right and equity, coupled with justice and fraternal feeling.

We find an illustration of this in the lives of two men well known to us all. Both commenced life poor, but possessed of a determination to rise above their surroundings. The elder of these turned his attention to merchandise, and had the satisfaction of hearing himself called "The Merchant Prince of America." It is said of him that he was a hard man, one who demanded his "pound of flesh, full weight," in every transaction; feared, but not beloved by his employes; a man of

great reserve, holding himself aloof from all associations and influences which tend to soften and refine our natures. Year by year his gains increased; his heart was set upon the accumulation of gold, and gold poured into his coffers until it could scarcely be computed. But there were things his gold could not purchase—the love, respect, esteem of his fellow men so largely denied him, was “above the price of rubies.” He passed away, and his magnificent fortune, the accumulation of a lifetime, is fast being scattered to the winds.

The other lad, after many struggles, passed into early manhood. Business prospered with him also, and required his close attention; but he was never too busy to lend a sympathetic ear to the tale of suffering, never too poor to extend a helping hand to the worthy or the needy. A quarter of a century or more ago we saw him directing that tide of Christian charity into its proper channels, that the people of the north poured out with lavish hand, in order that, so far as possible, the sufferings and privations of those who thronged our camps and hospitals might be relieved and lightened. Later we see him gathering his co-workers, as it were, into one great family, caring for each individual member as though he were a son, and making such provision for their families as to place them above want in case of the death of the head of their household. Time will not permit the enumeration of the blessings which come to humanity with every pulsation of that great and kindly heart. The promise made to “him who hath a liberal hand” is his. No man in the private walks of life has endeared himself to so large a circle of his fellows, or of men whose lives are cotemporary with our own, no name will go down to posterity surrounded by such a halo of light, as that of the proprietor of the Philadelphia Ledger. It is needless to inquire which of these two lives we admire the most; the question could have but one solution.

But do I hear some one ask, “What has all this to do with our Society; what application has this to me as an individual tradesman, busily engaged in seeking a support for myself and family? I can not be a Childs!” True, neither need you be a Stewart; but you can use the means at your command.

How is it, my friend, about that surplus stock of plants or flowers you so often have—what becomes of them. Passing by the wealthy customer to whom you may sometimes send a box by way of advertisement, or the tradesman from whom you expect to receive something in return, how often have you prepared a package of what you must soon throw away, and after writing a short note of sympathy or encouragement, sent them to some poor, obscure, but worthy person, struggling, perhaps, under a heavy load; a mother, may be, overworked and weary with the ceaseless, ever present care of providing for a fatherless household. How often have you sent a portion of your surplus to brighten the home of the sick, or given it to some hospital, that homeless ones, those who have no bright outlook in life, for whom remains nothing but visions of the dissecting table and a pauper's grave; how often have you been the means of sending one ray of sunshine into their cheerless lives, carrying them back perhaps to their days of innocent childhood, to their childhood's home?

I know of nothing within the gift of man, as a gift, that will so stir the inmost recesses of the soul, or call forth greater expressions of joy or gratitude from the recipient, than flowers. Such as I have described cost us nothing but the effort

of bestowal, and if the heart goes out with them what is the return to the donor? Will neighbors, friends, the circle in which we move, think less of us as business men because of this softening of our natures, this desire to brighten lives that rest under a shadow? We do not need to proclaim the motives that actuate us from the housetop; disguise them as we may, be they good or bad, men will read and judge us by our acts, and do you think they will think less of us as individuals, as a society, or do you believe they will be more likely to withhold their patronage from one composed of tradesmen whom they know to be honest, just, generous men whom they consider public benefactors.

In one of the discussions which arose in the National Society upon the subject of honesty, the statement was made by a prominent disputant that "the florist was not born to be a philanthropist." This may be true in its broadest sense, but can not business and philanthropy be blended in ways that have been mentioned? Surely no business gives greater opportunities, through no other can we so readily reach the human heart.

Then let us, while gathering for ourselves, dispense of our abundance to others. Let us conduct our business honestly, legitimately, fully assured such methods will bring to us prosperity and characters that will command the respect of our fellows. Is this what we live for, or is the reverse, with all its attendant evils and discomforts? It is a question for each of us to answer for himself.

I have said we admire traits in men which bring success. In our own calling a man has recently passed from among us who was pre-eminently a self-made man. Few who knew him were aware of the bitter struggle he experienced in early life with obscurity and poverty, all of which was overcome by the great will power born with the man.

We know where the familiar face and form of our friend sleeps to-day, but who will undertake to tell where rests that busy brain, that tireless energy of heart and will that made him the prince of florists. We know not. This we do know: the accumulations of a long and busy life are all left behind; nothing he brought into the world, nothing he takes from it but character. Principles of life, thought, affection, will, these constitute character, and they must forever remain as we make and leave them.

We are also reminded by the absence of three of our own members to-day that our opportunities of living and doing for ourselves and others will not always continue. Shall we not, then, for the future seek to elevate our business, and thus not only rise in the scale ourselves but endeavor to draw with us all with whom we come in contact.

Much has been accomplished by the National Society during the few years of its existence towards increasing the interest in all that pertains to our business. New lines of thought have been opened, new methods have been advocated based on successful experiment, remedies have been sought and found for some of the evils which have fastened themselves upon us, and it is fitting that this, an outgrowth of the parent society, should receive our best thought, our wisest councils in all that pertains to its future prosperity.

Our worthy Secretary, to whom more than any other one man we owe whatever of success has attended our efforts in the past, has outlined four topics.

Doubtless others present have questions they desire to have discussed. One has already been mentioned to me by one of our members as to the location of our November meeting. Would we be warranted in holding our exhibitions in other cities of our State, changing their location from year to year?

To these I will add two: First—Is our meeting in this city of sufficient benefit to the trade outside of our own to warrant us in asking them to make full provision for our premium list? Second—Is it best for the Society to assume the expense of our annual banquets? Is any change in this or other respects advisable?

I leave these questions with you without comment or recommendation, simply remarking as I close, that observation teaches us the lack of careful financial management is as fatal to societies as to individuals, and that it has been the one great hindrance to the growth as well as the cause of the final demise of many a horticultural society of more than ordinary promise.

"In the multitude of counselors there is wisdom" is an ancient proverb, and if we can unitedly agree upon a course to-day that will insure a happy outcome of the questions before us we may consider our time as having been well spent.

On motion of Mr. Wiegand the address was directed to be placed on file in the report and a vote of thanks extended for the valuable production.

J. D. Carmody. I see we have Mr. Mitchell of Cincinnati with us who has had many years of experience and feels an interest in the cause. I therefore move that he be made an honorary member of this society. Carried.

Secretary Bertermann submitted his annual report as follows:

SECRETARY'S REPORT.

The record of the society show for the year commencing November 1, 1889, five honorary members and sixty-seven regular members, an increase of 18 members over the year previous. The society was organized in 1887 with 34 charter members. The financial statement is as follows:

Balance on hand February 1, 1889.	\$84 90	
Received dues	134 00	
	<hr/>	
Total receipts		\$218 90
Running expenses	\$84 95	
Drawn by Exhibition Committee.	104 56	
	<hr/>	
		189 51
		<hr/>
Balance on hand February 1, 1890		\$29 39
Exhibition requisites on hand, estimated value		\$92 00

We have lost by death three members, Mr. Dave Taylor, Mrs Henry Hilker and Mr. Chas. Rieman, all of Indianapolis. Proper notice was taken by the society. The Annual Convention of the Society of American Florists will be held in Boston August 19, 1890.

Mr. Fred. Dörner was again elected Vice-President for this State at the Buffalo Convention.

The committee appointed by this society and the one appointed by the Horticultural Society have worked together until now. A new Floral Hall at the State Fair Grounds is assured and a much better premium list is prepared.

Mr. Fred Dorner, Treasurer of the society, presented his report as follows:

TREASURER'S REPORT.

Receipts.

Balance February 1, 1889	\$84 90
Dues for 1889 and 1890	134 00
Total	<u>\$218 90</u>

Expenses.

Banquet February 22	\$30 00
Stenographer	12 50
Glasses loaned	70
Printing	7 00
Stamps, etc	3 20
Cut flowers	5 00
Funeral expenses	6 00
State Fair premium	2 00
Badges	11 55
Printing	6 25
Deficit on badges, Buffalo	75
	<u>\$84 95</u>
Drawn by Secretary to cover deficit of Exhibition Committee .	104 56
Total expenses	<u>\$189 51</u>
Balance	<u>\$29 39</u>

Inventory of exhibition goods on hand, estimated value:

Muslin	\$7 00
Decorations	25 00
Vases	60 00
Total	<u>\$92 00</u>

J. D. Cormody. I move we refer the report of the Treasurer to the Executive Committee to be audited. Carried.

Mr. W. G. Bertermann, from the Exhibition Committee, submitted the following report:

REPORT OF EXHIBITION COMMITTEE, THIRD ANNUAL CHRYSANTHEMUM SHOW, 1889.

The committee appointed at the last annual meeting, submits the following for the Society's careful consideration :

The Chrysanthemum Show of 1889 was a decided improvement in every respect over the previous one. It has passed into the records as one of the best floral exhibitions ever held in this country. The quality of chrysanthemum plants was good ; cut flowers were excellent—some of them the best ever seen.

The one-judge system again gave unusual satisfaction. All premiums were paid in full. The weather during exhibition week was a drawback again for accumulating a nice surplus.

There were some doubts expressed in regard to the advanced admission fee of fifty cents for each evening, but, on the contrary, it was an improvement, as it effectually divided the attendance over the whole day. We gave especial attention to good music each evening, which was duly appreciated.

FINANCIAL STATEMENT OF EXHIBITION COMMITTEE.

Receipts.

Tickets	\$1,112 10	
Cut flowers	174 90	
Miscellaneous	69 25	
Plants	260 88	
Banquet	28 00	
	<hr/>	
Total		\$1,645 13

Expenses.

Advertising during industrial parade July 4 at Ind'pls . .	\$52 35	
Printing	49 05	
Labor	57 55	
Advertising	131 15	
Cost of material	136 04	
Decorations	174 44	
Premiums	480 15	
Banquet	192 10	
Music	132 00	
Hall and light	149 00	
Auction	142 43	
Miscellaneous	58 23	
	<hr/>	
Total expenses		1,749 69
Total receipts		1,645 13
		<hr/>
Deficit		\$104 56

The competition for the silver cup given by Mrs. Benjamin Harrison, called "The National Prize," was very spirited. About twenty entries were made. It was carried off by Mr. Theo. Spaulding, of Orange, New Jersey. Several other varieties were given a certificate of merit, as follows: Clara Rieman, exhibited by Henry Rieman, Indianapolis; Mistletoe, exhibited by Fred Dorner, Lafayette; Emily Dorner, exhibited by Fred Dorner, Lafayette; Cyclone, exhibited by Thos. J. Spaulding; E. G. Hill, exhibited by Thos. J. Spaulding; Zenobia, exhibited by Thos. J. Spaulding; Mrs. Benj. Harrison, exhibited by Thos. J. Spaulding; Rosebank Gem, exhibited by John Thorpe; Triumphed, exhibited by Hill & Co.

REMARKS ON EXHIBITS BY THE JUDGES.

Mrs. Alpheus Hardy, shown by Henry Rieman, Indianapolis—A well grown plant, showing the fine quality of this exquisite variety.

Mrs. Andrew Carnegie, shown by H. Rieman, Indianapolis—A very creditable plant of this variety.

Best ten plants, amateur, by Ernest Huckried, Indianapolis—A fine and very creditable display.

Shown by Mr. Dorner, of Lafayette—An exhibit of seedling carnations, among which are many very promising and distinct varieties, some shades of pink and rosy pink are distinct from any others heretofore shown.

From M. A. Hunt, Terre Haute—An exceedingly fine display of cut roses of the finest size and quality; an honorable mention.

From Pitcher & Manda, Short Hills, N. J.—A display of choice orchids, Mrs. A. Hardy chrysanthemums, and some new varieties.

From John Rose, gardner to F. J. McFadden—Cut blooms of chrysanthemums were possibly the best group ever shown.

Judges were on different exhibits—

John Thorpe, Pearl River, N. Y.

J. M. Jordan, St. Louis, Mo.

F. J. McFadden, Cincinnati, O.

Following firms had goods on exhibition only:

Elverson, Sherwood & Barker, New Brighton, Pa., Standard Pots and Vases.

Detroit Pottery Co., Standard Pots.

Pitcher & Manda, Short Hills, N. J., Orchids and Chrysanthemum Flowers.

Falls City Wire Works, Louisville, Ky., Wire Floral Designs, a good display.

Indiana Wire Works, Wire Floral Stands.

Wm. Pegdon, Marion, Ind., Specimens of Variegated Fushias.

A. M. Trosell, Knightstown, Ind., Chrysanthemum Plants.

M. A. Hunt, Terre Haute, an excellent display of Cut Roses and Adiantum Ferns.

Bertermann Bros., Indianapolis, Metal Wreaths and Floral Goods.

Fred. Dorner, Lafayette.

W. F. Law.

J. D. Carmody.

E. G. Hill.

Henry W. Rieman.

VISITING FLORISTS OUTSIDE OF STATE.

John N. May, Summit, N. J.
 John Thorpe, Pearl River, N. Y.
 Charles Mitchell, Cincinnati, Ohio.
 Harry Bunyard, Short Hills, N. J.
 Harry Balsley, Detroit, Mich.
 Wm. H. Elverson, New Brighton, Pa.
 H. W. Fachman, Louisville, Ky.
 Elizabeth Miller, Ironton, Ohio.
 H. Sunderbruck, Cincinnati, Ohio.
 Rich. Witterstater, Cincinnati, Ohio.
 Robert J. Murphy, Cincinnati, Ohio.
 Wm. Sunderbruck, Cincinnati, Ohio.
 Fred. Walz, Cincinnati, Ohio.
 C. L. Mitchell, Cincinnati, Ohio.
 Robert C. Ergott, Cincinnati, Ohio.
 Jacob Schulz, Louisville, Ky.
 C. F. Franks, Champaign, Ill.
 J. M. Jordon, St. Louis, Mo.
 John Goode, Springfield, Ohio.
 David McGregor, Springfield, Ohio.
 John Rose, Cincinnati, Ohio.
 F. T. McFadden, Cincinnati, Ohio.
 Wm. Mott, Philadelphia.
 H. L. Phelps, Springfield, Ills.
 Henry Koeing, St. Louis.
 G. Drobisch, Columbus, Ohio.
 Roger Murphy, Urbana, Ohio.
 T. Young, St. Louis, Mo.
 Geo. Schultz, Louisville, Ky.
 — Walker, Louisville, Ky.

On motion of J. D. Carmody the report was accepted.

Member. I believe that Mr. Carmody was appointed last year to prepare a design or monogram as an emblem or badge for the society; as he is not ready to report, I move he be continued. Carried.

President Hunt submitted a letter of invitation to the Society of Indiana Florists from James D. Reynolds of the Chicago Florists Club to attend their annual dinner February 26, 1890.

E. G. Hill was instructed to prepare a telegram in response to the invitation; it was sent and following answer received:

CHICAGO, Feb. 26, 1890.

To Wm. G. Bertermann:

The Chicago Florist Club send greeting and expects the Society of Indiana Florists here in a body in ninety-two.

J. D. REYNOLDS, *President.*

CHRYSANTHEMUM SHOW.

E. G. Hill, Richmond. I think we ought to take up for discussion the question of holding a chrysanthemum show and whether it would be advisable to change from the capital city for our November exhibit. It is well understood in the minds of our members that we should hold a show.

J. D. Carmody. I move that we hold a chrysanthemum show next fall. Carried.

J. D. Carmody. I will say that if you will bring the show to Evansville, we will give you a cordial welcome, but we will not promise to feast you and have the Indiana Florists to pay the expense. We may give you a sandwich or two, to show that we won't starve you (Laughter), but won't run it like last year. Let economy be our watch word and main endeavor to improve and make a good show and benefit ourselves and our society, and not attempt to make a great display at a large expense. There are other cities, perhaps, nearer the center, that would do equally as well, like a stone thrown on the water, take the first circle, and gradually work to the outer edge. There is Lafayette, which has been represented each year by Mr. Dorner. Even Ft. Wayne, perhaps, would be better, and is a larger city. Terre Haute has generally given us the go by, not sending a representative, except Mr. Hunt. Perhaps that might give us some inducement. By going to Terre Haute we might stir them up to giving a better support to the show. Mr. Hunt has never given the chrysanthemum show any help only by his presence and advice. We want to go right to them. Things at a distance look very small. I remember once while traveling on a railway train and from the windows I could look down a thousand feet, I saw a canal boat, horse and driver, they looked like specks, and I took no interest in them because the distance was so great. We want to create an impression, and to do that we must go to them. These florists look like specks down on the Ohio river. We want to go right to them and show what we have got. It will make a difference. If the National Association was held in one place each year it would be the same thing over each year. I think our members would increase in number by moving it around. I am in favor of shifting. I am in favor of the good old Methodist plan, get a new man and stir up the natives.

E. G. Hill, Richmond. There are other things besides the shifting of scenery, however; these points are well taken. Mr. Carmody would like to have it down at Evansville, but would Evansville guarantee so much money and as large an attendance, and put us on a safe footing? Indianapolis is the largest city in the State, and accessible by railroad from all parts of the State. The question is, could we get support by going to Lafayette, Terre Haute, Richmond, or some of our other cities? This question of gate receipts is a big thing, and could we expect or hope to receive outside of Indianapolis \$1,100 or \$1,200 in money. It is money that makes the thing go. I am willing to try it outside of Indianapolis, but I want to do something in putting up money for the holding of this exhibition. If we can have support in the effort it would be a good thing, and I would be willing to try it.

Wm. Langstaff, Indianapolis. I should like to see it tried in other cities. Sometimes by changing that way we get at facts, and begin to know and realize what a thing is worth. Only those who get down to real work realize these from a distance. In looking over our report I find that our exhibition cost us \$1,749, and we only got a little over \$1,600, not quite enough to pay the debt. We must bear in mind that it requires money to run these shows, and the question is can we take this show to any other part of the State and make it profitable to the Association. If we take it to Evansville, and the citizens guarantee to make it profitable we would then have something to go on, but if not, we would have only the State Association to guarantee the loss, if any. We have tried in Indianapolis for three years and made a hundred dollars a year, but every man put his shoulder to the wheel; it was hard work, and every man took an interest in it and brought flowers. There are a great many florists in Indianapolis who have wielded influence in this Association in times past, and whether such aid from other cities would be obtained is a question for consideration. But if you want to do it, now is the time to do it. If you think Richmond, Lafayette or Evansville are proper places to hold this exhibition I am one that will go with you, and work with a hearty good will. We must remember that it is work to ship these plants, besides there is considerable expense attached to it. The florists of Indiana are not going to risk going down to Evansville, in the "pocket of the State." It is almost out of God's country. [Laughter.] If we are going to have a chrysanthemum show let us have it, and let us work in earnest for it. Gentlemen, it is a matter of great importance, because we have the burden to bear. If we go out of Indianapolis there will be expense to bear, and the question is, can we shoulder the expense?

D. W. Cor, Crawfordsville. The question is whether the florists of Indianapolis will shoulder this expense or not. Indianapolis is in the center of the State and three years of advertising here is worth something and if they are willing to take it again there need be no discussion on the location.

W. S. Gordon, Indianapolis. The matter of expense and transportation from one end of the State to the other would be considerable, and perhaps the smaller cities will not support us. We should look after the expense first. Indianapolis has supported us throughout and perhaps will again. I do not think it is a good idea to shift on uncertainties, but if this society say shift it, I am with them every time.

President Hunt, Terre Haute. Before moving away from the center there should be some missionary work done in our own cities. At Evansville they have held a good fair, and Richmond will hold a local fair this fall and if other cities would do this then there would be more reason in considering the propriety of going away from Indianapolis than now. We don't raise chrysanthemums at Terre Haute.

J. D. Carmody, Evansville. We can grow chrysanthemums in the "pocket of the State," and we have got wealth there. I think we can get up a guarantee fund and will do more than Indianapolis will. You say Indianapolis is the best place because you have a guarantee; we had it here for three years and last year we run in debt, and we should now move. I will not guarantee that we will give a show and pay expenses of \$1,700. I would not get it up on that scale. I would do away

with several things done here last year. I would not decorate the hall so much which did not draw a dollar extra to the treasury. There are many things we can do to diminish expenses and we might curtail our premiums. We can move away from here if all contribute to the show. Not over eight florists made the show here last fall in Indianapolis. If all the florists will bring ten plants a piece they will make as large a show as we had last year. We want every one to bring the best plants; the expense of shipping that many would be light and we could make out our premium list to suit the exhibit, so every body will have a chance. I am in favor of holding it somewhere else besides Indianapolis.

Secretary Bertermann. We might save much in the way of decoration.

Fred. Dorner, Lafayette. For my part I have no inclination for holding a chrysanthemum show beside the State show for I would be alone. I am in favor of holding our show at Indianapolis; we may not all get here and it need not prevent us from holding a show at home. I would like to see local shows where they can not attend the State exhibition.

Mr. Hill. I move that the next Chrysanthemum show be held in Indianapolis.

Carried. The Secretary was instructed to prepare blank certificates of merit.

E. G. Hill. While we are on the chrysanthemum question why not take up and discuss the premium list now? As for myself, speaking for the florists outside of Indianapolis, I would like to see a greater portion of premium money put on cut bloom. The florists of Indianapolis say it is hard work, which is true, but it is no small task for others who have brought plants here, getting them out of the greenhouse and shipping here, and then from the cars to the hall. Criticism has been made by Mr. Carmody as to the decoration of this hall. I think the wishes of the Society should be heeded and complied with. I would like to hear a talk about the amount of money to spend in premiums, and what amount on pot plants and what on cut bloom. We could make our exhibit interesting by dividing in two classes—pot plants and cut plants. If we could have long tables filled with cut blooms, such as were exhibited at Cincinnati, it would be fully as interesting as pot plants.

President Hunt. I presume the committee would be glad to have an expression on this matter, as it is an important feature of our November meeting.

Henry Rieman, Connersville. Cut flowers are good enough, but won't show like plants. Nobody can compete with Mr. Rowe, of Cincinnati, when you take into consideration his way of growing.

President Hunt. As Mr. Mitchell is with us to-day it would no doubt interest the Society to hear a few words from him on this subject.

Chas. Mitchell, Cincinnati, Ohio. I feel some hesitation in giving expression on the Chrysanthemum Show, and the way of dividing a premium, for several reasons. In the first place I have never grown Chrysanthemums in my life, and never have been connected with but one show, and when we got through I realized that the committee had made a great many mistakes, although we were satisfied with the progress we made, but if it were to do over again we would do differently. My experience has not been much, and could not speak with confidence as to what should be done, but I agree with Mr. Rieman, that cut flowers will not make a good show

alone, and neither will plants make a good show alone. If I were to venture to express an opinion, I will say the only way to make a show really successful is each year to give to the public something better than the year before, and something different. I think you want to encourage not only cut bloom, but cut sprig on single stem. I think it is a mistake not to be very liberal in the premiums. There can not be much division as to the question of money, but so far as the money goes, you want to give ample premiums to all; last year we called for too much. We called for twenty-five plants, and ten plants at a time, but when we got through we found we asked more than we should. Probably out of five men one man put half the plants in that show. This don't encourage the florist as much as to give smaller premiums, and call for one-half or one-third the quantity, you will then have as many plants represented and the premiums more varied. We give the understanding that if we do better than any body else we get a premium, and if we get a premium we need not be disappointed, so I should say, perhaps, vary the number of premiums and cut down the amount so as to insure a number of competitors in every class. As to decoration of hall, we did not do enough. When the hall is well decorated and made to appear well, visitors go away feeling they have got the worth of their money, and learned more than the year before. The only way to accomplish what we are after is to educate the public, and get them indirectly to support us. It comes back to our pockets. If we can show them fine flowers they will be our purchasers. In your reports you take in more money each year. We fell in the same line, and are satisfied. As long as we come out even we are willing to spend it in that way.

J. S. Stuart, Anderson. A small number of cut flowers will give a greater chance and present on exhibition a fine appearance, whether we increase or decrease the premiums. I think we should call for a smaller number of plants, and am in favor of continuing the same amount in premiums.

D. W. Cox, Crawfordsville. I wish to ask of the members of the Association present whether they are satisfied with the result of the Chrysanthemum Show last fall? Mr. Carmody says we run in debt and was not satisfied with the decoration. What we made and accomplished last year is worth all we paid for it. We have started out to accomplish a certain purpose, and we will have no claim on the public if we go back from that of last fall. I want us to keep the premium list up to that show in every particular.

J. D. Carmody. I move that a committee of seven be appointed to prepare a premium list and report to-morrow, to be composed of the following gentlemen: Wm. G. Bertermann, Fred Dorner, E. G. Hill, Wm. Langstaff, Henry Rieman, D. W. Cox and J. S. Stuart.

President Hunt was also made a member of the committee, and the motion carried.

The Chair. I find a few questions here in the query box; perhaps now would be a proper time to dispose of them?

QUESTION 1. "What is it that is put in the soil to change the color of the flower of the Hydranga? Iron or sulphate of copper?"

DISCUSSION.

J. D. Carmody. Iron rust will change the color of the flower to some extent.

E. G. Hill. I have never tried it. I have heard that iron rust would do it. A number of cases I have heard of where iron pyrites and also copper would change the color of the flower of the Hydranga, but I have never experimented.

Pierre Valandigham, Purdue University. It depends very much on the soil. It is the presense of oxide of iron in the soil that produces this change of color. Some have to mix iron with the soil.

J. D. Carmody. A solution of copperas, which is sulphate of iron, applied in quantity not to burn the plant will produce blue flowers in the Hydranga.

QUESTION 2. "Will the use of natural gas justify the reduction in the price of cut flowers and plants?"

DISCUSSION.

E. G. Hill. It is a matter of cost of fuel. At Richmond they fell off 25 per cent. last winter when we burned coal. I do not think there is any thing in that question worth discussing.

QUESTION 3. "What are the best kinds of Hydranges, and what time should they be started, also what is the best treatment for them in summer?"

DISCUSSION.

E. G. Hill, Richmond. I see the old Hortensis is still good and has a light down. Hogg also has a light color. There is a dark specimen grown in France, I can not call the name, which I believe would be good in this country. In places they grow large quantities of Hydranga from two to six feet high and were fine plants; I was surprised that they could cram them in five inch pots and grow with such perfection. We might try that in this country. I asked Mr. Eurow, who had four or five thousand, if there was any particular management; he said "no." Seed from those plants should be from ripened plants and they could not ripen Hydranga paniculata and get them to flower as well on a higher dryer latitude. At three or four years of age they could get good bloom, and when the blooms come, use manure to perfect them. I was a-tonished and surprised to see Hydranga paniculata in such perfection.

J. D. Carmody. Last season I planted Hydranga in open ground early in the fall, taking them up shortly after the first frost, put in pots and set under a bench; they have picked up considerable and make fine plants now. We can put in pots now and get them up in April. These are the old Hortensis variety. There is nothing better than this for large flowers. This is the way I treat and have good success.

Mr. Dorner. Did they grow Hydranga paniculata out of season?

Mr. Hill. It was a market plant in the spring the same as other plants.

Mr. Dorner. Does it on through the winter?

E. G. Hill. These, gentlemen, propagate about the first of the year. The bloom is in September. They bloom pot plants and are remarkably nice.

QUESTION 4. "How does this warm weather affect violets that are blooming?"

DISCUSSION.

Mr. Rieman. It blooms quite early and until now. Other years they bloom in the spring, but this winter they have bloomed right along. The double bloom did not bloom satisfactorily, while the single did well.

Mr. Carmody. In the southern part of the State we only had two nights with the thermometer down to twenty degrees. Our double violets, white and purple, have not bloomed since the first of January; quit blooming all at once.

Mr. Dorner. I have some violets growing out in the cold frame, and have nice blooms now. We are not growing in artificial heat, they have been frozen hard sometimes.

QUESTION 5. "Is it advisable for the Executive Committee of the National Society to obtain their membership through representation from our local societies?"

DISCUSSION.

E. G. Hill. This is an interesting question for every florist who has the welfare of the society at heart. The appointment of the Executive Committee is vested in the President of the association; that is he appoints three members each year to fill the vacancies of the corresponding outgoing members. It would be according to Democratic ideas and Republican principals that the florists should select from their members representatives for that body. It would give to the different organizations a word in the administration in the National Society. Some say, "Well the whole thing is controlled by whoever have the presidential office, and some sections of country are not represented and have no voice in the National Association." The Executive Committee of the National Society are above suspicion, and work for the best interest of the National Society. The National Society should have money with which to offer premiums and put its committee to work in an efficient way, heretofore they have had a lack of money to back them up. The Executive Committee are to be paid their expenses every year, and it is a strain on the National Treasury, and, of course, if the local clubs are represented in that association, they should bear a part of the expense, so it would be a benefit to elect members of the Executive Committee. We can never estimate the good coming from the National Society. I have attended a part of them, they go over the ground and select the best men in the business to deliver essays. The success of the meetings held by the National Society are due in no small way to the Executive Committee. Perhaps it would be a better way to do for each club in the country to elect a member of the Executive Committee. We would then have to amend the constitution and by-laws of the National Association. I think they would be willing to do anything that would be for the best interest of the association.

Charles Mitchell, Cincinnati. While I agree with Mr. Hill that it would be an excellent idea to have the members of the National Executive Committee selected

by the States which they represent, I do not see how it is possible to accomplish that object at present unless the various States are going to do some work in advance. Mr. Hill perhaps has forgotten that most of the organizations, if attending, represent their States. Then, again, there is likely to be local organizations whose members are not members of the National Association. It would be strange that a person not a member of the National Association should cast the casting vote. We would have to provide a limitation as to who should select the Executive Committee, which would be good to induce the florists of the State to get together and organize, and where florists of any State are members of the National Association and have the form of State organization, then they might select a member of the Executive Committee. That would be an organization, but there would also have to be a provision made in case they failed to select them. It would bring the florists together, and in their meetings they would select one to represent their best interests in the National Society. In saying this I do not want to criticise the Society and the men who compose the Executive Committee, for they have accomplished great good for us and given satisfaction before the National Society. But it certainly puts much responsibility on the officers delegated to select these men if they have little support back of them. They represent the Society and for the Society; they are all interested in the Society, yet at the same time representing a certain interest, and consequently pushing forward questions that affect that section, and they would be made to feel the importance, and there would be better results than now. But the great good, and best, is in compelling the florists to organize their own States and bring them together in order to select their representatives. It would bring them not only to the State Society but to the National Society.

Chair. These societies are the outgrowth of the National Society. As suggested to the National Society, the different clubs of the State Society would have representation and quicken their own life. We would naturally expect they would send their best men for council in the interest of the National Society, and for the work they accomplish, so they would be a benefit to their own societies. I do not know as we can take action at this time to appoint a committee to consider this subject of our National meeting.

We should recommend to the National Association that the Executive Committee of that Association be made up of every florist club who care to assume to send their men to attend the National Council. In that case it need not be left to each State, but to every florist club. It seems to me it is something looking to the life and activity of the State and local societies. Perhaps this should be left until the August meeting.

E. G. Hill. When a man is appointed to the National Association he naturally looks over the field and drops on the prominent men who have always turned up at our State meetings. If this is the local club they could pick out good men and send them there. It would place the power in the hands of the Association and they could select less known men and bring closer union between the National and local associations.

The Convention adjourned until 6:30 o'clock P. M.

EVENING SESSION.

President Hunt called the meeting to order at the appointed hour.

W. G. Bertermann. I move that the Exhibition Committee consist of seven outside the officers of the Society. Carried.

Mr. Pierre Valandigham, of Purdue University, read the following paper on

THE CULTURE, CROSS-FERTILIZATION, OF THE VARIOUS ORCHIDACEOUS PLANTS.

Of all the plants, the orchidaceous plants as a fact are universally known by botanists and specialists for their most peculiar and singular form of structure and as plants belonging to the phænograms, occupying a place all to themselves, owing to not having pistils and stamens surrounding a central ovarum, as is usually the case in other plants.

It is my intention here to interest you and briefly describe the various characteristics and singularities of these tribes.

First we outline them by the Linnea system, which is the most correct—Class XX, Gynandria, with three orders leading to identify; those orders are as follows:

Order 1, Monandria—Signifying one stamen. This order is divided into five groups. The first group are those with anter terminal, erect pollen, granular cohering by an elastic thread. Second group anther parellel with stigma, pollen powdery. Third, anther terminal, persistent pollen, powdery. Fourth, anther terminal, opercular deciduous pollen, waxy. Fifth, pollen granular.

Order 2, Diandria—Signifying two stamens with one group, in which case the plants having exposed anther of a waxy or glucose nature.

Order 3, Hexandria—Signifying 6 stamens with one group and only one genius, which is described in Loudon's Encyclopedia as aristolochia, one petalous ligulate, ventricose at base, capsule six-celled. We are obliged here to go a step farther and see how they are divided into the natural orders. They are here divided into eight great tribes, which are as follows:

Tribe 1, Neottieæ,
Tribe 2, Arethuseæ,
Tribe 3, Gastrodieæ,
Tribe 4, Ophrydeæ,

Tribe 5, Vandeæ,
Tribe 6, Epidendreeæ,
Tribe 7, Malaxideæ,
Tribe 8, Cypripedieæ.

(See Loudon's Encyclopedia on classification and arrangements of the generas.)

Having the whole system explained by which they may be identified, it is advisable to use the glossary, that is to say, a comparison as to the petals, sepals and the labellum of the flowers and also the cross-section of seed capsules. Second, in the leaves, stems, bulbs and pseudo bulbs, whether terrestrial or epiphital; all this is of the greatest importance together with the proper works of books render the collector all that is necessary for his rambles in the temperate and tropical regions.

Going over to a question of propagation and cross-fertilization and the culture in general adopted, it will be admitted by those who are familiar with these plants that they, as a rule, do not grow from cuttings, and that their process in

BOARD OF AGRICULTURE.

varies from other phenogramous plants, their growth in general is usually produce one yearly growth. In some species, however, young produced along the sides and tops of their long and slender stems or s. In such instances they may be multiplied faster than in those cases one yearly growth is produced. Secondly, they may be growing from t this operation is a tedious one. Many have attempted, but only a few have succeeded. They may be growing by placing the seeds on an orchid block or pots filled with moss. In cases where they do not produce young plants on their stems they may be also multiplied under the following system. That is by cutting them through in sections and producing backgrowth. For instance, a plant is selected which has five or six pseudo bulbs, each of which representing one year growth. These may be cut through with a sharp knife. This should be done after they are done blooming, being careful not to destroy the roots, and each piece should have some roots attached to it; after they are thus handled be placed in some damp shady part of the house without receiving too much moisture at the roots until they have made a start in growth and showing the appearance of making new roots. At this time they may be separated and potted or tied on a block, with some fresh fibrous peat and sphagnum moss.

Again, it has been often said that these tribes of plants are difficult to cultivate. I admit that that may be so with some species, of which the nature is not absolutely known, but as a general rule they may be successfully cultivated, but it is advisable in all cases—first, that the grower of such plants should carefully consider their circumstances and find out in what country, latitude and altitude they are found and in what conditional state they grow there, whether terrestrial or of an epiphital nature. Another important fact is to know their resting seasons, which these plants require, and when in this dormant state they should have only enough water to keep them from shriveling. In order to be successful the cultivator has to keep an eye toward that season. When this dormant state is over they gradually make young growth. At this time moisture may be applied, and if any fresh peat or sphagnum moss is required this should be attended to at once, and should not be neglected, for a banking up with these materials around the roots is a great benefit to them; also, take care not to bank up too high so as to bury the young growth, but leave them at all times well elevated above the moss or peat.

The orchidaceous plants we divide here again into two great sections, namely, epiphital and terrestrial. The epiphital sections are those which abound in the tropics, and inhabit trees and rocks from which they derive little nutritious matter. These species are the most numerous, and produce the handsomest flowers. Again, some may be found growing on the branches of living trees, and others favoring elevated situations in dense forests, and on the trees overhanging lakes and waterways.

The terrestrial section are those which grow in the earth, and embrace all our North American and others in cold climates, and a few in the tropics. The requirement of heat and moisture varies also for the epiphital section. We need a temperature for the cool house species of from 45° a 65° F., and for the East India species of from 65° a 85° F., it may also occasionally rise by the addition of sun

heat to a 5° more. The house which they are in should be at all times well provided with moisture, and during summer should be protected from the strong rays of the sun. The best means of shading is thin muslin. This should be placed inside of the house, and so arranged on pullys that the shading may be pulled up or down at will. There is, however, a great mistake among the orchidists in giving too much shading, as it generally produces a slender and weakly growth, and in such instances the plants do not mature as well as they should. The general result is a poor crop of bloom.

The treatment for the terrestrial species belonging to the warm climates may be placed with epiphites. The other species of this section, such as our North American and other cold climates, may be also cultivated. Amongst these are some very fine and interesting species, such as the *disa grandiflora*, a native of the Cape of Good Hope. All our natives, *Aplectrum*, *Cypripediums*, *Goodeyrinus*, *Habenaræ*, *Orchis*, and many others.

The best method of growing these is to prepare a mixture of fresh fibrous loam peat and sand, equally divided. This would be adopted in cases where we did not know the exact nature of the soil what a certain plant requires. The safest of all is, if we were to go out and collect them, is to inspect the surroundings, such as soil, locality, weather, north or south, east or west, and how much, amount of light received. They may be all potted in the above material, with good drainage. If needed for planting out of doors, in open ground, it is safest to plant them at an northern exposure, as they all love plenty of moisture. When in vigorous growth a good supply of water around about them keeps the air cool and moist, in which they delight to grow; it is also desirable to give them a little protection during winter by placing some leaves or straw over them. The propagation of the terrestrial section is generally done by dividing the roots.

Having described various details, I call your attention to the singular contrivance of the structure of these tribes. First, we have the columna formed, of a fleshy, undivided process, containing the pollinium and stigma, which is located in the center of the petals and sepals. This organ, together with the petals and sepals varies in the different tribes by having a likeness to some forms of animals, to which they are nearest related, of the whole vegetable kingdom. The peculiar structure and the positions in which the pollinium is placed is certainly remarkable, by having them concealed or covered over by a cap or cover, or better called anther-case, the latter fixed so firmly at the terminal end of the columna that there is no escape for the pollinia. The stigma, composed of a glucose substance, is generally located below, or underneath the anthers, in a hollow cavity, and is only divided by a thin, fleshy layer, thus having no connection whatever with one another.

In the *cypripidium* we have a flower with three sepals and a labellum of a saccated form, the columna in the center terminating in a petalloid lobe, having two distinct exposed anthers, of a waxy substance, adhering to the columna; next a rudimentary shield-like anther; below this the stigma, of a flat, fleshy circular process in the center of which is a slight triangular depression. See section of the flower [Fig. 1 *Cypripidium* about natural size, bloom letter A. Anther S. stigma.] Fig. 2, seed-pot about its natural size. Fig. 3, cross-sections of seed-pot, showing the location of the seeds after being impregnated three months.



Fig. 2.



Fig. 3.

Fig. 1.

It naturally brings a question, how, and in what manner, are these plants fertilized, and how do they reproduce themselves? I will point out, here, two ways in which it is possible. In a great many species the pollinium, when relieved of the anther-case, are suspending; some have the pollinia on long elastic threads or filaments while others on short ones, which, if not carried off by the insects, swing backward and forward in all directions by the wind, and may possibly strike the stigmatic surface. This may, however, take place in a very few; for example, in the genus *Ornithocephalus*, order *Vendee*, and *Ophris*, order *Ophree*. Again, we have another more singular case in the *Catasetum*, the most remarkable of all the tribes, upon a gentle touch on the anther-case the pollinium are ejected with a violent force and are often found from one to three feet away from the plant; in a great many instances the elastic threads serving as springs and pushing the pollinia upward with a heavy pressure against the cover or anther-case, but, for the want of sufficient power are held firmly in place, and if it were not for the various insects which visit them, they would have long ago become lost to the world. In conclusion, how, and in what manner, is fertilization and cross-fertilization thus carried on by the various insects. Let us see, here, for a moment; supposing we have a flower with the columna in the center, the terminal end of that organ is, in many species, slightly bent forward. Upon the approach of the moth bee or other insects who may happen to feed on them, their first landing place is generally at this

point; in this instance the anther-case or cover is snapped off and the pollinia either drop off or are suspending on elastic threads, and, in some cases, are shot out toward the body of the insect, to which the pollinia readily adheres, and to be carried in this manner to the stigmatic surface while the insect is in search of the nectar; if not left in the same flower, it is carried to some other; in which case we have unbounded proof by various specialist and other close observers. I present you, here, an instance under my own observation. I had at this time several plants in bloom. I noticed in *Chysis Bractesceus* that the pollinia of another genus had been carried to the former and had left the pollinia of the *Chysis* undisturbed, showing that this sort of work of insects must be carried on largely where such plants are numerous. There are, then, again, instances where the insect has trouble to do this fertilization. I shall take up, here, a plant which you all well know and some of you have, perhaps, in your houses; that is, the *Cypripedium*'s form of organ, and how fertilization takes place here. I am happy to say that I witnessed this work. I caught a small honey bee and placed the animal in a bag made of musquito netting. I placed this over the flower of a *Cypripedium* and watched the movement for over an hour; at the end of that time the insect was upon the rudimentary shield-like anther, finding nothing here, it moved around to the opening below in the saccated labellum, managing to get here; it moved again upward, passing under the stigmatic, fleshy substance; on its upward move, it tried to become free and get out, but, finding the aperture, here, too small, owing to the column, anthers and the sides of the labellum becoming smeared on its head, body and limbs, it returns back under the stigma, and, leaving parts of the anthers on the stigmatic surface, the fertilization was in this instance well worked, and seeds were duly formed. We have also records, where moths were so heavily loaded with the pollinium of orchids on their proboscis, that death was threatening them if not relieved.

We turn our attention here to the amount of seeds they produce in the various capsules of the many species. We have some instances where they have been counted. In my past experiments I found in a single capsule of *Cypripedium* 41,550 seeds. Charles Darwin adopted a method which works well for the purpose. He measured them with a long ruled line as equally as he could in a narrow hillock, and then counted the seeds in an accurately measured length of $\frac{1}{16}$ of an inch. He found in one capsule 6,020 seeds. Mr. Scott informs us that he found in the capsule of an *Acropera* 371,250 seeds. Fritz Müller also found in a capsule of *Maxillaria* 1,756,440 seeds. To think of the enormous quantity of seeds and the amount of pollinia is required to bring such a number of seeds to perfection. How is it thus that the amount of orchids is not larger with such large number of seeds they produce? We have only partial explanation. The general belief is, of the improper impregnation by nature; and, second, the enormous amount of pollina it requires to fill and mature the seeds. But as to a true statement of this fact these have not, as yet, been explained to the world.

As to sensitiveness of the organ, these varies also from other plants. I have noticed in my various crossings that when the pollinia was applied on the stigma of different species that some of the flowers could remain longer fresh while others had their petals and sepals at the end of 24 hours so faded as if cut off the plant a

week, which otherwise would have lasted from three to four weeks. The most sensitive in my record is *odontoglossum caudatum*, which, after receiving the pollinia, the petals and sepals rapidly faded away, the columna very much swollen. At the end of 36 hours this organ was $\frac{1}{3}$ size larger than the original. When we take a penetrating look and study in these genera we can not help to observe this sensitive action in the various species. The pollinia brought in contact with the stigma affect some of the species so remarkably as if having received a severe shock.

The enumeration of orchids, according to Mr. Lindley's statement, is 433 genera, with 6,000 species, variously distributed over the globe. Finally, when we look over them, we all must admit that they are certainly curious plants. Is it thus possible that the Divine Creator left this plant in such helpless condition after He made them male and female all combined in one flower? We shall say here, no. He created them upon the same level as he did other plants. He provided for them also in giving them gorgeous and conspicuous flowers as well as odor and excellent perfume such as no other plants possess. He certainly would not neglect them, but cared for them in providing for them with various sized insects and commanded to visit them for the nectar, and further to perform the necessary work for their reproduction. He made all things well and to the best advantage for either the animal or the vegetable kingdom, and which natures have been directed to associate with each other.

On motion of J. D. Carmody, a vote of thanks was tendered Mr. Valandigham for his able address.

Mr. E. G. Hill, of Richmond, favored the Society with the following paper on

"FLORICULTURE IN EUROPE"

Before presenting his paper Mr. Hill said: "I shall speak of commercial floriculture in that country. I am perfectly willing to talk on any phase of the subject, or tell you of the treatment, or what I saw, or any class of plants you may select, either Roses, Carnations, Dahlias or Herbaceous plants, but I thought possibly you would be interested about the growth and development of Begonias. Every person who crosses the waters is delighted and surprised with the magnificent array of bulbous Begonias. They figure at all the commercial establishments in Europe where a collection of plants are kept. At Mr. Campbell's, the first place I visited, I had the pleasure of viewing bulbous Begonias in quantity. He had house after house filled with these beautiful plants grown in pots. John Land, of Forest Hill, near London, has the largest collection of Begonias in the world. He has them by the acre. He has his method of planting, as does Mr. Campbell. I was at Mr. Croot's, in France. He has one collection of double variety of Begonia, and by actual measurement has produced flowers measuring four and one-half and five inches in diameter, varying in color from beautiful satin white to beautiful scarlet and crimson. Mr. LeMoyne has many fine varieties. At Piggat's is another remarkable collection. They grow them by the thousand. You would be surprised at the splendor they present. There is a future for that plant in this country. I have a few notes here which I have made on what I saw in that country, which I will now read:

The subject assigned me covers a wide range, but I will confine my remarks to commercial floriculture as viewed in the nurseries and horticultural establishments of a few of the larger firms. To give a detailed description of the many different places would consume too much of your time, therefore I have thought best to take up and give the methods pursued in the cultivation of a few different kinds of plants.

Bulbous begonias are grown magnificently in England, by Cannell, of Swanley, and John Laing, of Forest Hill. The bulbous begonias growing in the nurseries of Messrs. Cannell were almost exclusively grown in pots in narrow green houses, with plenty of air, and shaded by painting the glass with a wash of some kind. The houses in which the plants were growing were constructed of sash, and they were raised alternately at top and bottom, thus causing an uninterrupted flow of pure air throughout the day. The soil in which the plants were potted was a fibrous loam, with a smattering of good clean sand mixed with it. On inquiry we found that fertilizing material was used quite freely to produce the fine, large flowers that completely enveloped the plants. The color, fine form and exquisite shading of many of Mr. Cannell's new varieties was quite surprising. Whole houses were devoted to their culture, and we had the pleasure of viewing the plants that were soon to make their debut on the exhibition stage. At Mr. Laing's, however, was to be seen the choice English raised double varieties of which the firm is so justly proud. Mr. Laing, the elder, has given years of uninterrupted study to the improvement of the bulbous begonia, and his large and complete stock of both named varieties, and seedlings, attested the splendid results obtained by this painstaking man. In the houses, growing with a freedom quite unseen in America, were hundreds and thousands of plants that were carrying a wealth of bloom that would gladden a plant lover's heart. Exquisite new shades of color and form have been striven for, and most agreeable results have been obtained. Mr. Laing has secured some lovely light shades in the bulbous begonia family, which are unique and distinct from the productions of other raisers. The one essential thing in their cultivation seemed to be the circulation of plenty of fresh air in the houses, judicious watering, a slight shade to break excessive sunlight, and, I fancied, a liberal use of manures.

One thing, however, that attracted my attention, was the unlimited quantity of seedling plants under cultivation. The culture was quite different from what I saw at any other place in Europe. The plants were simply bedded in rows 12 inches apart, and 6 inches apart in the rows. I did not inquire the amount of ground occupied, but it must have been quite two acres. Fancy two acres of begonias, every plant in bloom, and you can quite imagine my surprise when this vision burst upon my eyes. I doubt if they could be grown thus in any other part of Europe; but the moist climate of England, with its mellow sunlight, seemed to suit the begonia perfectly, in this particular place at least. It can be said without fear of contradiction, that the seedling plants produced at this establishment were but little behind the named kinds, the difference in price being so great that I should unhesitatingly use seedlings were I intending to form a collection of begonias for stock purposes.

There are two doers of bulbous begonias at Nancy, France—Messrs. LeMoyne and Crousse. The first named gentleman has originated many very fine new sorts, and he has been one of the most successful of those who have taken this particular plant in hand. Owing to the drier atmosphere and the bright sunshine prevalent in France, a different method of culture obtains over that pursued in England. Mr. LeMoyne has a frame work of coarse mesh wire elevated on posts high enough to walk under, and on this mesh he had laid brush, or similar material, so that the sun's rays were prevented from striking the seedling plants, which had been planted in just the same manner as those described above, growing at Mr. Laing's. One thing noticeable was the rather stiff, clayey nature of the soil in which Lemoine had planted his begonias. They were making a short, sturdy growth, and were pictures of good health, free from rust. They water these quite freely with cans—rarely see a hose in use in Europe for watering other than grass.

At Mon. Crousse's we found the most magnificent sight that we had yet beheld. His method differed somewhat from the other places we had visited, in that he used a filmy burlap for shading purposes, elevated on posts high enough to walk under, with burlap hung on the south side to break the sun's rays. Such a sight as I beheld in one of those burlap covered spaces I shall never forget. In beds six feet in width, and slightly raised above the general level, were planted all the finer named varieties and selected seedlings.

Begonias in that country are exceedingly fine especially so were those at Mr. Croots; I saw them there where the sun's rays were broken two feet high and a number of plants had from twelve to fifteen big flowers on them. I measured a number of them and some would run from four to four and one half inches. Mr. LeMoyne went with me to visit Mr. Croots, and I must say that the florists of France, like many here, are jealous. He has some kind of preparation put on, all of which goes to show that human nature exists there as well as here. Mr. Croots grows them in ordinary cold frames and from this they spread and overlap, and when we were there, about the first of August, the plants had so completely covered the ground and frames the leaves could hardly be seen on account of the flowers. Mr. Croots' method is adapted to growing in this country. Mr. Croots' soil is different from that of Mr. LeMoyne, which is low ground, yet right in the city of Noncène. Mr. Croots had his place covered with two to two and one-half inches of manure and use it in that way for Begonias. I asked if in their opinion we could select and raise the bulbous Begonia successfully in this country. Mr. Croots said take the smaller-leaf kind, the leaves of which tend upward and were capable of standing the sun's rays better than the large leaves; by careful selection we could plant the bulbous Begonia, but of course he knows little of the intensity of the sun in this country. When I was at Mr. Croots, he was busy propagating; when I returned to England I told Mr. Laing that Mr. Croots was propagating bulbous Begonias in the summer; he did not believe it. I told him how he did it and he set right to work propagating at once. The way Mr. Croots was doing, he had a propagating house that was ten feet wide with bottom heat; he put this bulbous Begonias in here with a temperature running from 108° to 110° and open in a short time. He was doing it, and also Mr. Vogland, who had it to perfection, and had the whole side of the house with cuttings of bulbous Begonias. I said to

Mr. Vogland, "will these cuttings you have made August 6th, make bulbs and ripen by fall?" he said "yes;" and would like us to give him an order for eight hundred. We did so. He had not at the time over fifty plants, but along in December here come eight hundred plants; the bulbs would average from three-quarters to an inch in diameter and that bulbous Begonia could be grown, and naturally, as cheap as any plant he knew of.

Mr. Wiegand was in the company, who can tell something of this. The collection of Mr. Vanhoots was extremely fine. We found that he had selected seed from all the growers in Europe and they were flowering to perfection both in borders and in greenhouse and grown in pots as Mr. Cample was doing. It would astonish you to see such houses of flowers as we saw in that country, the wealth of bloom and bright colors of flowers all of which were nice and especially the begonias. I hope we will give a trial of this plant in this country. If there is anything else in connection with the culture or manner of treatment which you would like to know, I will endeavor to answer the best I can. The ordinary way of propagating the begonia is to divide the root and make cuttings of the root in the latter part of winter or early spring. There is no particular secret about it and is generally done in March or April but not later than the first of May. I visited the establishment of Mr. Vanhoot where Mr. Valandigham spent five years of his life. He was the greatest botanist that ever lived, he died some ten years ago and his nursery is run by his daughter and covers 280 to 300 acres of land, not planted like nurseries here, two or three feet apart, but planted close, not more than twelve inches apart and they had, I think, 32 acres blooming; a wonderful sight to look upon. They have the best there and grow every plant under the sun. Another thing might interest you, this certainly did me. At this firm we found thousands of Chinese Azalias, they grow them in frames and pots and on peat loam, covering when the sun is too warm. They grow with a vigor that would astonish American growers. When they ship them in the fall they cut out a square of earth with them. They had from three and a half to four acres of Azalia growing in frames. Going through their houses, there is one house after another filled with the choicest plants in the world, new plants of every kind known under the sun in quantity. Camelias are going out of date, the demand has fallen off in Europe as well as in this country. The plants in this establishment were all in good health and vigorous in growth, all plants were growing luxuriently. You have no difficulty in getting along in France and also in Germany if you want to buy plants, for they can talk English, they have such business with England and the United States; they know that it is necessary. Though I think Mr. Carmody would have difficulty at Lyons, France. You can do well enough in the northern part, but in the southern part it is different, they repeat their words and talk with such rapidity it is difficult to understand. At Lyons, France, we had an interpreter.

DISCUSSION.

Prof. Valandigham. Mr. Vanhoot was one of the most practical botanists in the world; he was widely known and a genteel man who sent many good men out.

Mr. Hill. I thought, while there, any man who could run his grounds, would have the ability to run the business of the Pennsylvania rail road.

Mr. D. W. Cox, of Crawfordsville, read the following address on

"ADVANTAGES OF ASSOCIATIONS."

Since the beginning, men have found it advantageous to associate themselves together for the common good of all. The most crude tribal relations, as well as the highest type of civil government, not to mention the thousands of other ways by which men become allies, are examples in proof of this fact that such associations are helpful to their individual members.

And we, who come together as the Society of Indiana Florists, need no proof that our society is of value to us, beyond our past experience, during the short time that we have been laboring together. And judging by the benefits already received, we have much to hope for in the future.

That there is a large number of florists in our State, who are not yet members, and who would be very useful in carrying forward the work we have undertaken, if once enlisted in the cause, is my apology for writing this paper.

No florist knows *all* about floriculture. Every florist knows *something* about floriculture; and, collectively, we *all* know *all* that is known about this matter. And yet we *all* do not know *all* that is *to be known* about our business. No one will claim that he knows too much, and with a general desire existing among florists to become better posted, it seems a little bit strange that all do not avail themselves of this, one of the very best means of gaining information. I can account for it on no other grounds than petty jealousies. These are unmanly and contemptible, and there is no remedy for them so sure as meeting together occasionally for an exchange of ideas.

We become acquainted, and find the men for whom we had a feeling of distaste to be tip-top fellows, well informed, and ready to drop us more good hints than we are able to pay for in suggestions of equal value, instead of the pig-headed old duffers we had imagined them to be. Some may be benefitted in different ways more than ourselves. But what of that. Surely because we can not get it all, is no reason why we should refuse to accept any of the benefits. Practical experience is no doubt man's best teacher.

But life is certainly much too short for any one to become wise by personal experience alone. The wisdom of the world is the accumulated experience of past ages. Each generation beginning where the preceding one left off.

We acquire an education by appropriating to our own use from this store whatever we may be able to learn in the same way. We add to that which was left to us, and in a small degree become benefactors of those who follow us.

Now, if the many, working together for a definite purpose, on a pre-arranged general plan, can accomplish more good than by their individual efforts, even if directed to the same end, is not this sufficient reason for forming associations? And I hold that this is a truth self-evident.

Ours is comparatively a young industry on this continent, and especially is this true here in the West. Not long has it been since the getting of the absolute necessities of life taxed the minds and hands of those who came to develop this land. We know that to them our business owes the possibilities of our existence

here, yet we also know that they gave but little attention to anything that did not furnish something either to eat or wear. Necessity exacted this of them, and they in turn taught their children that time or money spent to gratify the finer sensibilities was little better than thrown away. This teaching still has its effect even now, that there is no good reason why anyone ought not to be able to indulge their tastes to some extent in this direction.

At first, toil and drudgery were necessary to produce the wealth that makes ease and comfort possible; culture and refinement follow; literature, art and music receive more and more attention from the people. Floriculture belongs with this group of refining influences also, and is as worthy of honorable consideration as they. It is potent for good, and appeals to the better nature of mankind as eloquently, yes, more directly to the masses than any of these. Flowers are the most favored children of nature, and are enjoyed by all classes irrespective of educational advantages.

It is only necessary to bring our flowers and our people together that they may become better acquainted to make them fast friends. To do this speedily and thoroughly all should work willingly together, because all will be alike benefited; and no one should expect to reap where he has not sown, or profit by the labor of others when he stood idly by during a time when he was needed.

We want to educate the people to a point where our products cease to be a luxury, and become a necessity. Slowly, but surely, we move in that direction; and the nearer we approach the goal, the more imperative are the demands from our customers for the very best that our skill can produce. Education is telling on them, and they will no longer be satisfied with just anything the florist may have on hand, but know good stock when they see it, and insist on having the best.

To meet these ever-increasing requirements of our business demands careful consideration, and we will not all know more than will be needed to meet them; therefore, we would urge those of the craft who are not now members to lend a hand to keep the wheel of progress rolling. Do not be afraid of being called on to give more than you will receive, for already those that are nearest the top are heartily engaged in the work, and you will get the benefit of their experience without reserve. The Society of American Florists has brought out men who shine by the light of their own worth in our profession, who are able teachers and who unselfishly impart valuable information to all who inquire. Yet not one of these but would freely admit that he had received ample recompense for what he has given.

Ours was the first State to organize an association. Our efforts have not been without results, and we are proud of the work already done. Come in and help us to a finish.

Adjourned until 9 o'clock A. M.

THURSDAY MORNING SESSION.

President Hunt called the Society to order at 9:30 A. M., and stated that the reason for not meeting at the appointed hour was on account of the Committee on Premium List not having completed their work. Before proceeding further we should appoint a Committee on Unfinished Business.

Mr. Langstaff. I move that such a committee be appointed. Carried.

The following paper, prepared by W. H. Lawrence, was read by Assistant Secretary John Hartje:

"THE FLORA OF FLORIDA."

From what I have seen, read and heard, Florida floriculture is in its infancy, but it is a giant in its swadling clothes. So far as florists with green-houses, like those of the North, are concerned, not much can be said, for really, there is no need for them, flowers that will grow outside need no glass, and those that probably would do the best otherwise would find but few patrons.

Take Tallahassee, for instance, (and many other places I have visited) half of the high-toned, or "upper crust" portion of the population, in their way, are amateur florists. Attached to their residences are large enclosures filled with every variety of flowers that grow in this latitude. Either negroes or some competent white man works the same when the weeds become too numerous. A funeral takes place, and instead of going to the florist for designs, these people make up their willow designs and present them to the family of the deceased. When a prominent stranger arrives at a hotel his or her table is showered with *free* flowers, all for effect, you know. A swell wedding comes off, but the home florist, if there is one, stands no show whatever, all on account of these extremely clever folks. I think Mr. John Heine will bear me out in this statement.

The scenery of Florida is grand, but it is not of the "sky-piercing," dizzy precipice kind. Outside of a few "fearful gorges," the country presents a soft and placid beauty, which harmonizes with its climate, and which has, perhaps, a more satisfying and enduring charm than some of the bolder and more startling physical aspects of nature.

Not long ago I stepped into a front yard in Palatka, and was admiring a large bunch of Phlox Drummondi; the lady said that it yielded her more enjoyment, so far as sight, smell, color and perfume was concerned, than any other flower. The self-sown plants come up all seasons of the year, and their countless blooms are a perfect blaze of all colors, nearly, and all shades of colors.

The petunia I meet every where I go. It comes late and lasts a long time. Many prize them highly, especially the double ones. Some grow the verbena in alternate rows with the petunias, and claim that either are as easily raised as weeds, or nut grass. The later is the florists' pest; it is to them there what the Canada thistle is to the people of the North. It throws out long roots that seem bound to go in search of water, and every few inches a nut is formed. John Heine's florist, at Tallahassee, had the grass, and he was in a high state of excitement when he was depicting the evils arising therefrom, and showing the decayed roots to me from the compost heap.

It is very common to call the rose the Queen of flowers, though her right to the title has been disputed by the friends of the lily, chrysanthemum and other flowers that might be named. It is still an open question in many places, but in the portions of this State that I have traveled over the rose is so numerous, out of doors, and so far ahead, that there is practically no rivalry. The Japonica has an upward tendency and eventually may be at the front.

The history of the rose runs so far back that its origin seems to have been lost in the mists of antiquity. Homer, the old, old author tells us of the rose and uses it to ornament the armor of his heroes. Here, like other places, it is used to ornament the lapel of the coat, and for five cents the prettiest of pretty, American Beauty, La France, Niphetos and others can be had from the front yard or at the flower stands on the corner ANY winter day. I find the faintly-scented ones are very numerous. The growers seem to look at form and color but have lost sight of fragrance. In my judgment a scentless rose can be easily matched in beauty by one having additional charms of fragrance.

Standing at the fish market in Tallahassee recently, my attention was called to a dilapidated old man with a basket of bulbs; he was praising them to the skies to a crowd of colored butchers as he laid them out on a bench. Said he, "this is the Colona tulip or German Bleeding Heart." Out came another lot and they were told that they were the Cologue tulip which bloomed every day in the year, Sundays included; these flowers were simply gorgeous. Said he, "they stand up as straight as a fishing pole during the day and droop their heads after old Sol passes to his resting place at dewy eve." After dark the buyer could pass around among his bloom and squeeze genuine cologne therefrom. He then produced some other bulbs and told the darkies that they were a fly eraser and teetotal vanisher; take them to your homes, said he, plant them in pots and by the time flies come to your butcher stalls they will be in bloom. Set them on your meat block and the flies will not stay in gun-shot of them. He priced them at three for 25 cents and buyers were numerous. I crowded up a little closer, and after inspection found them to be nothing more or less than calamus roots.

Neat designs here are rare. I have visited a large number of florists' establishments and saw but few designs in wire and naturally inquired the reason and was told that many of their patrons preferred to cut a pear limb, bend it into the shape they desired and then tie their roses and japonicas to the circle, a very awkward proceeding, but it seems to be the style. I attended a minstrel show the other night in a prominent city in Florida and saw some of the most ungainly bouquets sent up to the stage I ever beheld. It was a pity to have such beautiful flowers as were in those groups so awfully mangled. On the streets they display a dozen clumps of rose buds in one place, in another eight or ten single japonicas. One negro boy passes up and down Jacksonville sidewalks each day with eight or ten diminutive violet button-hole bouquets.

Christmas decorations in Jacksonville, on the outside, were very extensive, and well they might be; here is the home of the pine, cedar, magnolia, holly, moss, live oak and many other evergreens. They bring them in by the wagon and boat load. I asked an old darkey how much he received for a smack load of holly he was dumping on the warf. "Seventy-five cents, sar," was his reply. Vaughn would ask

a ten dollar bill for the same amount. In their festoons and wreaths they insert oranges, flags, lemons and pine-apples, and they look decidedly handsome. But the sun was so warm between their tall brick walls that in a few days after Christmas they ceased to have their original beauty, but they are plenty and all that is necessary to do is to send their colored help to the woods to cut more.

Many of the trees in the various sections I have passed over are festooned with wild grape vines, others with clemates, yellow jessamine, woodbine and trumpet flowers, while the spegelia, turkey berry, daisies, primroses, violets and other flowers that I know not of, but delicate and pretty, peep out from among a variety of grasses, which send up their bolder, artificial looking blooms, stiffly and singly. In such places is found the sparkleberry with its beautiful white drooping bells across the way is the wild plum full of its feathery bloom and the dogwood almost ready to shoot forth its white blossoms. The red bud and the old man's beard is also plentiful and much larger than in some portions of the North.

The long, somber gray moss which is pendent from every limb, without detracting from the beauty of the country, is seen everywhere, and seems to tone down the other gay scenes one sees all over the State.

As you gather together on this ever patriotic day in the handsome capitol of Indiana the writer wishes you great success in all of your deliberations, and sincerely regrets that he can not be one of your number.

Chair. I would suggest that those who prepare papers and can not be present to read them have them copied with type writers, in order that they may be more easily read.

Mr. Langstaff. I move that a vote of thanks be tendered Mr. Lawrence for his valuable production. Carried.

M. G. Bertermann read the following paper on

"NEW ORLEANS AND VICINITY."

When we arrived at our destination the weather was delightfully cool, but still warm enough to be comfortable. It was very dusty, though—no rain for several months, as we were told—but a splendid rain on the second day of our arrival brought everything out in fine shape. Climbing and other roses, which were up to then in rather a dormant state, bloomed out beautifully; Magnolia and Orange trees seemed to and did get a glossier and greener foliage. Southern springtime had arrived four weeks sooner than usual. Amaryllis were shooting their large buds all over the beds in Jackson Park; Hibiscus ten to twelve feet high were beginning to burst into full bloom, but a few Banana trees we saw had a sorrowful appearance; the leaves were split all over from the wind and spoiled by the dust.

Parks and other places of interest are not kept up in a way that they ought to. They could be made beautiful spots with a little care and attention. But it is different with the cemeteries; they are fairly kept up. The Chalmette, the National Cemetery especially, is a model of Southern growth. Some elegant specimens of Magnolia, Grandiflora, Orange trees, Arbacoitae and Tea roses were seen there to perfection.

A few plants offered for sale at the French Market were miserable, but brought good prices, single Geraniums, for instance, in four-inch pots, bringing twenty-five cents. We would throw them away. We did not see but very few spring plants for sale, which is very astonishing. They would certainly sell well, and would be much easier for people to cultivate in there, we might say, perpetual gardens, but, as in everything else, there is an absence of enterprise, which we noticed after arriving at our destination.

Mr. Maitre, the leading and oldest florist, received us very kindly. He does a very large business, and receives good prices for everything he sells. He receives daily shipments of roses and other flowers from Chicago and other Northern cities. He explained to us that it was very difficult to raise good stuff in their greenhouses. He had some good Lillies of Valley in bloom, however. I think, with proper care, good roses and other flowers can be grown in profusion, excepting Carnations, which, I think, can not be grown at all in that climate.

The most plentiful flowers to be seen and offered for sale during our stay were Henriette and Neil climbing roses (buds small), Louis Philippe, Agrippina and a few old varieties of White roses, Orange blossoms and single violets.

There are beautiful private residences around New Orleans, surrounded by stately Palms, Magnolias, climbing roses, Hibiscus, Live Oak with drooping Florida moss, Orange trees in buds and fruit, forming a delightful picture. Wherever there is some care taken in cultivation a nice effect can be produced. We did not go outside of the city, except to the large sugar plantations, which are not interesting, except when the canes are harvested and prepared.

A very dreary country we traveled through after leaving New Orleans. We received invitations to the Rex Ball, expecting to see some elegant decorations, but we were sadly disappointed. A few Palms and drapings of flags were all. The hallways were trimmed up with Magnolia branches and Palmetto leaves. A very bad impression to a Northern florist or decorator is the too liberal use of wreathing made of all-colored paper roses and other stuff.

The Mardi Gras wagons were very beautiful, but the splendor did not go well with dirty streets, old street-cars and a very slight attempt at decorating along the street. When we left the thermometer was climbing up into the eighties, and the mosquitos were getting lively. In speaking for myself, Indianapolis and this climate is good enough for me.

Chair. So far as I know, we are now through with the programme.

The Committee on State Fair submitted the following report:

The Committee on State Fair, in conjunction with the same committee of the Horticultural Society, have accomplished their object. The State Board of Agriculture has agreed to erect a suitable Horticultural Hall, and revise premium list to the satisfaction of the Committee. A competent committee should now be appointed to draw plans or have plans drawn for the most suitable building for the purpose.

DISCUSSION.

Mr. Langstaff. This committee should be a joint committee with the Horticultural Society, as they are interested in the Floricultural and Horticultural Hall on the grounds. They took an active part in consummating our object. This committee should consult with them, and the two committees form the plan.

President Hunt. This can be arranged by correspondence.

Mr. Hill. Why not appoint our portion of the committee now? We might appoint two, with power to add one as occasion may require. I move that William Bertermann act in that capacity, and submit plans for the construction of a Floral Hall with the privilege of calling in aid.

Mr. Langstaff. There will be some expense attached to this. A plan would cost \$25; the question is whether this association should pay this. I think it should come from the Board of Agriculture.

D. W. Cox, Crawfordsville. To plan a building such as we need would require the work of an architect. It seems to me what the committee should do would be to state the size of it to the architect, so he might have some ground to work on.

J. D. Carmody, Evansville. Whoever builds the hall pays for the plan of the building. If I build a house I pay the architect for drawing the plan. There are a great many architects who can build a fine residence, but there is not one in a thousand who knows the requirements of florists—what to construct and build for the housing of plants such as we need for this purpose, and often florists themselves can raise plants, but when it comes to building houses for growing plants they want to change them every season, and so we are making mistakes all the time.

Mr. Hill. I think Mr. Bertermann might call in Mr. Carmody to his assistance, who can build any kind of air chamber up to an air castle a thousand feet high. [Laughter.]

The following officers were elected for the ensuing year :

President—M. A. Hunt, Terre Haute.

Vice-President—D. W. Cox, Crawfordsville.

Secretary—W. G. Bertermann, Indianapolis.

Assistant Secretary—John Hartje, Indianapolis.

Treasurer—F. C. Huntington, Indianapolis.

Messrs. Wm. Langstaff, Fred Dorner and B. F. Auger, from the Committee on Memorials, reported the following :

WHEREAS, In view of the loss we have sustained by the decease of our friends and associates, Dave Taylor, Chas. Rieman and Mrs. Henry Hilker, and of the still heavier loss sustained by those who were nearest and dearest to them ; therefore, be it

Resolved, That it is but a just tribute to the memory of the departed to say that in regretting their removal from our midst we mourn for those who were, in every way, worthy of our respect and regard.

Resolved, That we sincerely condole with the families of the deceased on the dispensation with which it has pleased the Divine Providence to afflict them, and commend them for consolation to Him who orders all things for the best, and whose chastisements are meant in mercy.

Resolved, That this heartfelt testimonial of our sympathy and sorrow be forwarded to the families of our departed friends by the secretary of this meeting.

DISCUSSION.

Mr. Carmody. I move that the thanks of the society be extended to Secretary Bertermann for efficient services rendered the society during the past year.

Mr. Gordon. I move to amend by including all the officers of the society.

Mr. Langstaff. This don't pay anything. They should be paid money for the service rendered, when there is any in the treasury. I offer this as an amendment.

E. G. Hill. I think I voice the sentiment of every member of the association to express our heartfelt thanks to William Bertermann, Secretary, for the energetic and business-like way in conducting the affairs of the association. When you think of what he has accomplished, and take into consideration the burden, we are surely in debt to him, and also, Mr. Hartje, for his aid to Mr. Bertermann. I do not know whether we could have made a creditable show without the counsel Mr. Bertermann rendered us. The existence of this society is due largely to the efforts of William Bertermann. I want to emphasize our feelings when we tender these thanks.

The Chair. In the remarks just offered by Mr. Hill, and referred to them yesterday, I do feel myself that our success as a society has hinged largely on the efforts of Mr. Bertermann, and had it not been on that, our central pivot wheel would fall to pieces. It does seem to me this motion should not be amended and include all the officers. We owe the greatest thanks to Mr. Bertermann.

Mr. Gordon. I do not wish to cast any reflection on any one. I know the amount of work connected with this association, and especially the Chrysanthemum show; the work is burdensome, and not every one capable of carrying it on. Mr. Bertermann has carried this work on ever since the organization of this association, without remuneration. I have had personal intercourse with Mr. Bertermann for three or four years, and he is entirely capable. I do not want any one to think I cast any reflection. I am willing to withdraw my amendment, and let it go as first offered. Original motion carried.

E. G. Hill. I understand it is settled that Chicago is to have the World's Fair in 1892. The State of Indiana is entitled to two Commissioners to represent us at that place, and I know that it would afford you all pleasure that our dear friend J. D. Carmody be placed in such position to look after our interests there. Let us importune and have Mr. Carmody put there. Horticulture will be a feature at that show, and we should have some one to properly represent us there, and I know of no one better than Mr. Carmody. I, therefore, move that Mr. Carmody be nominated for that position. Carried.

Chair. I hope there will be no hinderances thrown in the way for having the fair held there, and also trust that we will consummate the plan just out-lined, and elect our representative to take the responsibility of that position. We are always glad to see his cheering face with us.

W. G. Bertermann, from the Committee on Premium List reported that about the same amount of money as last show should be given, and also that the special committee recommend several other matters to the regular Exhibition Committee to be appointed.

Wm. Langstaff. I wish to say we might have a committee to wait on the Governor and invite him to give a premium for one of the best, which would add to the State a great deal. This list is not complete and should be left with the Executive Committee.

Chair. This discussion will bring out the views of the different members without taking any final action to-day which could not be done now. If the members wish to discuss the different needs of the premium list, it is well to do so now.

Mr. Carmody. I wish to say one of the finest features of the show, year before last, was the single flower Chrysanthemum; they are called for repeatedly. It would be a good feature to have a premium offered for this. It shows to what perfection they can be brought. They can be shipped in a small pot, with little expense, and give, sample of soil, method of planting and cultivating; this should be noticed, and a premium offered for that plant.

Mr. Gordon. Is it customary to settle on a name of a new plant or seedling while on exhibition the first time?

Mr. Hill. It ought always be done.

Chair. What other business is there to come before the meeting? Mr. Secretary have you a list of the Exhibition Committee?

Secretary. Yes, sir; I will now read them.

Committee on Exhibition, in addition to Officers of Association: A. Weigand, Henry Reid, Fred. Dorner, E. G. Hill, J. D. Carmody, William Langstaff, and D. W. Cox.

On motion of Mr. Gordon, the Chair appointed Mr. Bertermann a delegate to the State Board of Agriculture.

Mr. Bertermann. I decline that honor. I wish to have Mr. Langstaff appointed in my place, as he is familiar with the workings of the Board. I wish to withdraw in his favor.

Chair. I understand, Mr. Bertermann, that you withdraw; with that understanding I will appoint Mr. Langstaff.

1st Question: "What has the National Chrysanthemum Society done so far, and what are its prospects?"

DISCUSSION.

Chair. I do not know as I can say anything of importance on that question. I understand the Treasurer has run away to California.

Mr. Hill. If they are going to do anything, it is a mistake for not announcing it before now; as yet I think they have done little. The talk at Cincinnati

was to come west. It has not crystalized into anything. I think if our Secretary and President would send a message to them, and entertain a proposition to come to Indianapolis, we might find out something.

Convention adjourned *sine die*.

MEMBERS STATE FLORIST SOCIETY, 1890.

H. W. Fachmann	Louisville, Ky.
J. C. Trumpter	Indianapolis, Ind.
John Hartje	Indianapolis, Ind.
E. G. Hill	Richmond, Ind.
M. A. Hunt	Terre Haute, Ind.
Wm. G. Bertermann	Indianapolis, Ind.
Ed. Bertermann	Indianapolis, Ind.
John Bertermann	Indianapolis, Ind.
Julius Joachami	Indianapolis, Ind.
A. Wiegand	Indianapolis, Ind.
Chas. Rieman	Indianapolis, Ind.
Henry W. Rieman	Indianapolis, Ind.
Wm. Langstaff	Indianapolis, Ind.
John Baker	Indianapolis, Ind.
W. S. Gordon	Indianapolis, Ind.
W. H. Lawrence	Tallahassee, Fla.
A. M. Troxell	Knightstown, Ind.
W. F. Law	Shelbyville, Ind.
J. Larsen	Indianapolis, Ind.
Ed. Bissell	Richmond, Ind.
F. C. Huntington	Indianapolis, Ind.
J. D. Carmody	Evansville, Ind.
Wm. Hack	Ben Davis, Ind.
J. S. Stewart	Anderson, Ind.
Lawrence Swartling	Indianapolis, Ind.
Mrs. Henry Hilker	Indianapolis, Ind.
D. W. Cox	Crawfordsville, Ind.
Fred Dorner	Lafayette, Ind.
Mrs. Ellen Butcher	Irvington, Ind.
Wm. Hartje	Indianapolis, Ind.
Henry Rieman	Connersville, Ind.
Mrs. H. S. Keeley	Indianapolis, Ind.
Dr. J. A. Haugh	Indianapolis, Ind.
Ed. Corneli	Indianapolis, Ind.
B. L. Auger	Fort Wayne, Ind.
Geo. Youngerman	Indianapolis, Ind.
Mrs. L. J. Hiatt	Crawfordsville, Ind.
John Rose	Cincinnati, O.

Alvin Schriebner	Indianapolis, Ind.
Mrs. J. E. Bodine	Indianapolis, Ind.
Ernest Huckride	Indianapolis, Ind.
E. A. Nielson	Indianapolis, Ind.
C. H. Applegate	Indianapolis, Ind.
Louis M. Schwoerer	Indianapolis, Ind.
Theodore Bruckner	Indianapolis, Ind.
Bernie A. Fohl	Indianapolis, Ind.
John Rieman	Indianapolis, Ind.
Mrs. Mary B. Danley	Indianapolis, Ind.
M. Elverson	New Brighton, Pa.
George Butcher	Crawfordsville, Ind.
William Pegdon	Marion Ind.
J. T. Huntington	Indianapolis, Ind.
Charles Wheatcraft	Indianapolis, Ind.
Alfred Bauer	Richmond, Ind.
Harry Balsley	Detroit, Mich.
J. A. Evans	Richmond, Ind.
J. L. Koenig	Richmond, Ind.
Thomas H. Spaulding	Orange, N. Y.
William Blackman	Evansville, Ind.
M. E. Goode	Ellwood, Ind.
George F. Moore	Milton, Ind.
John B. Hatfield	Indianapolis, Ind.
Miss Emily Dormer	Lafayette, Ind.

HONORARY MEMBERS.

Mr. Edward Dunk	Evansville, Ind.
Mr. Allen Loyd	Indianapolis, Ind.
Mrs. Allen Loyd	Indianapolis, Ind.
Mrs. Carrie Denny	Indianapolis, Ind.
Mr. C. S. Denny	Indianapolis, Ind.
Mr. C. L. Mitchell	Cincinnati, Ohio.

INDEX.

A

	PAGE.
American Trotting Association, member of	63
Amphitheater Tickets	64
Advertising Matter	64
Annual Meeting—Proceedings	68
President's Address	71
Governor Hovey's Remarks	88
Dr. M. E. Knowles, State Veterinarian, on Contagious Animal Diseases	89
Dr. Hinbaugh's Address.	92
W. B. Seward's Address	174, 105
J. Q. A. Sieg's Address.	192, 110
D. L. Thomas' Address	187, 110
R. M. Lockhart's Address	181, 110
Dr. J. S. Jenckes' Address.	194, 110
Geo. J. Langsdale's Address.	110
Discussion, Speed Programme.	104
Adams County, report of	345
Acton District, report of.	378
Arcadia District, report of.	379

B

Board of Agriculture.	4
Barley	45, 35, 19
Buckwheat	45, 38, 20
Butter	47
Board, organization of.	59
Boys, Keeping on the Farm	187
Boone County, report of.	346
Blackford County, report of.	346
Bridgeton Union, report of	379
Bee Keepers—Proceedings.	547
President's Address	548
Securing Comb Honey.	549
Honey for Market	551
Preparation for Market	551
Spring Management.	553
Making Colonies Strong	554
Contraction for Comb Honey	558
The Drone and His Influence	558
Extracted Honey, What is it?	561
The Little Black Bees	562
Resolutions	563
Exhibits	564

C

	PAGE.
Crops, revenues of	17
Corn	44, 23, 18
Clover and timothy seed	34
Cheese	47
Cattle and hogs.	49
Cattle and hogs, death by disease	54
Committeemen, selection of	63
Central Avenue, remonstrance	65
Cattle, premium awards	112
Classified exhibits	157
Commercial fertilizers	166
Counties of Indiana, how named	343
County and district reports	345
Carroll County Report	347
Cane Growers, proceedings	592
President's Address	592
Selection of Officers	595
Variety of Canes	596
Sorghum Culture.	597
The best mode of handling cane.	600
How vegetables produce sugar.	603
The future of Sorghum	606
Programme for 1881.	607
Resolution, laws wanted.	608
Syrup manufactured, 1889	608

D

Dairy	21
Dogs, sheep killed by.	54
Drain tile.	57
Delegates to Cleveland.	67
Delegates, Annual Meeting	69
Decatur County Report	348
Delaware County Report.	349

E

English Shropshire Association Cup	63
Exhibitors' Tickets, price of	65
Exhibitors' Ticket, committees	65
Election Members (nomination)	96
Election Members	110
Entries, comparative statement of	156
Exhibits classified	157
Elkhart County Report	349
Eastern Indiana Report	380
Essay, Indiana as an Agricultural and Manufacturing State, W. B. Seward	174
Kind of Apples to Grow, R. M. Lockhart	181
Keeping Boys on the Farm, D. L. Thomas	187
Fiber Substitute for Manilla, J. Q. A. Sieg	192
Farming in Palestine, Dr. J. S. Jenokes	194

Essay—Continued.	PAGE.
Profit and Pleasure of Farm Life Compared, Judge J. C. Hadley	199
Silk Culture, Mrs. C. Mick	204
Home, Mind and Social Interests, Miss Ida F. Richardson	206
Plowing, Practical Farmer	211
Grasses of Indiana, Prof. Jas. Troop	213
Ensilage, C. B. Harris	306
Butter Making, Mrs. L. D. Worley	465
The Farm Dairy, Mrs. V. C. Meredith	466

F

Flax seed	39, 20
Fencing	57
Florists, State Association, Hall	62
Fair, date of, fixed	59
Farmers' Institutes, report on	99
Farm Products, premium	129
Fertilizers, commercial	166
Fiber substitute for manilla	192
Farming in Palestine, Dr. Jenckes	194
Farmer's "Round up Institute"	245
Fulton County Report	349
Fairmount Union Report	381
Florists, Indiana Society of, proceedings	609
President's Address	609
Secretary's Report	613
Treasurer's Report	614
Statement, Exhibition Committee	615
Remarks on Exhibits	616
Visiting Florists	617
Chrysanthemum Show	618
What is Put in the Soil to Change Color of the Hydranga?	621
Will Use of Natural Gas Justify Reduction in Price of Cut Flowers?	622
Best Kinds of Hydrangas and Time They Should be Started	622
Warm Weather, Affect Violets	623
Executive Committee of National Society and Memberships	623
The Culture and Cross Fertilization of the Various Orchidaceous Plants	625
Floriculture in Europe	630
Advantages of Association	634
The Flora of Florida	636
New Orleans and Vicinity	638
Report of Committee on Memorials	640
Report of Committee on State Fair Arrangements	639
What Has the National Chrysanthemum Society Done, etc.?	642
List of Members	643

G

Gates, report of	87
Grand Stand, report of	87
Governor Hovey's Remarks	88
Geology and Natural History Premiums	139
Gibson County Report	360
Greene County Report	360

H

	PAGE.
Hay, timothy and clover	46, 19
Hay, timothy	30
Hay, clover	32
Horses	51
Horses and Mules, death by disease	54
Horticultural Society, State Report of	60
Horticultural and Floricultural Hall	62
Department, report of	86
Horses, premium awards	113
Hogs, premium awards	123
Horticultural Premiums	135
Home, Mind and Social Interests	206
Hancock County Report	351
Harrison County Report	351
Henry County Report	352
Huntington County Report	352

I

Improvements ordered	64
Institute—Farmers' "Round Up"	245
Remarks—Dr. R. T. Brown	245
Sheep Husbandry—Hon. J. N. Davidson	245
Growing Pigs for Market—D. L. Thomas	250
How to Increase Profits of Farming—Hon. J. A. Mount	253
Farm Dairying—E. L. Furnass	261
The Ideal Horse for the Farmer—J. N. Latta	269
Food and its Preparation—Mrs. Rachel Swain, M. D.	276
Small Fruits and How to Have Them—S. Johnson	285
How to Better the Intellectual and Social Condition of Farmers' Families—Mrs. J. A. Mount	287
Injurious Insects and How to Destroy Them—Prof. F. M. Webster	294
What can Co-operative Efforts do for the Farmer—Hon. Milton Trussler	299
Remarks of Governor Hovey	306
Value of Ensilage and Other Fodder—C. B. Harris	308
Improvement of Public Highways—J. J. W. Billingsley	312
The Agricultural Press—Hon. J. B. Conner	318
The Privileges and Possibilities of Farm Life—Mrs. V. C. Merideth	323
Industrial Education—Dr. J. H. Smart	329
Fish Culture and Protection	336
The Institute Work—Prof. W. C. Latta	339

J

Jones, Richard, sympathy	67
Jacks and Jennets, Premium awards	119
Jackson County Report	353
Jay County Report	353
Jefferson County Report	355
Jennings County Report	355
Johnson County Report	356

INDEX.

649

	PAGE.
Jersey Breeders—Proceedings.	441
President's Address	441
Butter Tests of Jersey Cows	441
Secretary's Report.	444
Premium on Butter	445
Resolution—Sweepstake Premium	446
Theory and Practice in Feeding.	446
The Jersey Cow—Her Future Destiny.	451
Silo and Silage.	454
Improvements in Butter Making	461
Officers Elected	464
Butter Making	465
The Farm Dairy	466

K

Knox County Report.	358
Knightstown Union Report	382

L

Live Stock	21
Live Stock Diseases	22
Lambs	53
Loan	59
Legislative Business	59
Legislative Business—Streets—Fair Grounds.	60
Lease to Oliver Chilled Plow Co.	63
Live Stock Commission, Sanitary	64, 63
Lease to Hoosier Drill Co	66
Lease, stalls	67
Lake County Report	358
Laporte County Report	359
Lawrence District Report	382
Loogootee District Report	383

M

Meteorological tables	8, 13
Milk, test of	65, 47
Mules	51
Meeting Board, February	60
Meeting Executive Committee	64
Music, State Fair	64
Meetings at Exposition Hall	65
Meeting, annual	68
Manufacturing interest, Seward	103
Meeting, old Board	104
Marion County Report	360
Madison County Report	361
Montgomery County Report	361
Monroe County Report	362
Miami and Fulton County Reports	383

N

Noble County Report	
Newton County Report	
Northern Indiana and Southern Michigan Report	
North Salem Report	
Northeastern Indiana Report	
New Carlisle District Report	
North Manchester Tri-County Report	

O

Oats	4
Owen County Report	
Orleans District	
Officers, list of	

P

Potatoes	
Potatoes, Sweet.	
Premiums, amount fixed	
Sweepstakes	
Special Am. S. H.	
Purdue Trustees, Nominated	
Poultry, Coop rents	
Programme, no Postponement.	
President's Address	
Purdue, Resolution	
Protest, by B. B. Beeson	
Premium Awards, Cattle.	
Horses	
Jacks	
Speed	
Sheep	
Hogs	
Poultry	
Farm Product	
Horticultural.	
Geology, etc	
Woman's Department	
Profits and Pleasures of Farm Life Compared, by Judge Hadley.	
Posey County Report	
Pike County Report	
Putnam County Report	
Parke County Report	
Perry County Report	
Porter County Report	
Poplar Grove Report.	

INDEX.

651

	PAGE.
Poultry Breeders—Proceedings	533
President's Remarks.	533
Secretary and Treasurer's Report.	533
Date of next Show	533
Poultry at State Fair.	535
Breeding and exhibiting Poultry	538
Poultry for the Farm.	538
Incubators	540
Poultry vs. beef	541
Woman as poultry breeders	543
Election of Officers.	543
List of Members	

R

Record Table.	5
Revenue of Indiana Crops	17
Rye	44-36-20
Report of Secretary	75
Report of Treasurer	78
General Superintendent.	79
Mechanical Department.	81
Cattle, Beef Breeds.	81
Cattle, Dairy Breeds	83
Horse Department.	83
Swine Department.	84
Sheep Department.	84
Agricultural Department	85
Horticultural Department.	86
Gates	87
Grand Stand	87
Committee on Fair Grounds.	109
State Chemist	166
Resolutions, Purdue University.	109
World's Fair	109
Fish and Game Law	109
Ripley County Report	368
Rush County Report.	369
Report of Adams County	345
Boone County.	346
Blackford County	346
Carroll County	347
Decatur County	348
Delaware County	349
Elkhart County	349
Fulton County	349
Gibson County	350
Greene County	350
Hancock County	351
Harrison County	351
Henry County	352
Huntington County	352
Jackson County	353
Jay County	353

	PAGE.
Report of Jefferson County	355
Jennings County	355
Johnson County	356
Knox County	358
Lake County	358
Laporte County	359
Marion County	360
Madison County	361
Montgomery County	361
Monroe County	362
Noble County	362
Newton County	363
Owen County	364
Posey County	364
Pike County	365
Putnam County	365
Parke County	367
Perry County	367
Porter County	368
Ripley County	368
Rush County	369
Spencer County	370
Sullivan County	370
Shelby County	371
Stuben County	372
Tipton County	373
Vigo County	374
Vermillion County	374
Wabash County	375
Washington County	375
Wayne County	376
Warrick County	377
Acton District	378
Arcadia District	379
Bridgeton Union	379
Eastern Indiana	380
Fairmount Union	381
Lawrence District	382
Miami and Fulton	383
Northern Indiana and Southern Michigan	384
North Salem	384
Northeastern Indiana	384
New Carlisle District	385
North Manchester Tri-County	386
Orleans District	387
Poplar Grove	388
Remington District	388
Rush and Shelby	388
Switzerland and Ohio	389
Southeastern Indiana	391
Sheridan District	392
Warren Tri-County	393
Wayne, Henry and Randolph Counties	395
Washington and Clark	395
Xenia Union	395
Agricultural Societies—Table Form	397

	PAGE.
Report of Agricultural Societies' Officers	397
Agricultural Societies—Entries	400
Agricultural Societies—Premiums Paid	403
Agricultural Societies—Receipts	407
Agricultural Societies—Disbursements	407

S

State Industrial Association	7
Statistics, Agricultural	23
Corn	23
Wheat	25
Oats	28
Hay, timothy	30
Hay, clover	32
Seed, clover and timothy	34
Barley	35
Rye	36
Buckwheat	38
Flax seed	39
Potatoes, Irish	41
Potatoes, Sweet	42
Grain, table averages	44
Milk, butter and cheese	47
Cattle and hogs	49
Horses and mules	51
Sheep and lambs	53
Sheep killed by dogs	54
Disease, cattle, horses, hogs and mules	54
Fencing and drain tile	58, 57
County and District Agricultural Society	400
Street Railway Company, lease	61, 59
Stalls, Superintendent of	61
Superintendent's Department	61
Shorthorn premium milkers	62
Salaries of officers	62
Sanitary, Live Stock Commission	64, 63
State Fair, evenings	63
Stake race, premiums referred	67
Secretary's Report	75
Superintendent, General Report of	79
Mechanical Department	81
Cattle, Beef Breeds of	81
Cattle, Dairy Breeds of	83
Horse Department	83
Swine Department	84
Sheep Department	84
Agricultural Department	85
Horticultural Department	86
Gates	87
Grand Stand	87
Sheep, statistics of	53
Premium Awards	121
Speed Awards	119
State Horticultural, Special Premiums	138

	PAGE.
Substitute for Manila	192
Silk Culture, by Mrs. Catherine Mick	204
Spencer County Report	370
Sullivan County Report	370
Shelby County Report	371
Steuben County Report	372
Switzerland and Ohio Report	389
Southeastern Indiana	391
Sheridan District Report	392
Short Horn Breeders, proceedings.	409
Secretary's Report	409
Why Farmers Should not Use Grade Bulls	410
Care of Bulls from Birth to Time of Selling	415
Why Will it Pay to Give Shorthorns Good Care	428
The Most Economical Mode of Feeding Cattle	430
Governor Hovey's Remarks	432
Programme Next Meeting	436
Officers elected	437
Legislative Committee.	440
Swine Breeders, proceedings.	484
Does Raising One Litter a Year Tend to Produce Barrenness?	486
International Association of Swine Exhibitors, Resolutions.	488
Crossing of Stock	490
Feeding Pigs for Breeding Purposes.	491
Aged or Young Males	493
Resolutions	496
Best Care for Sow and Litter.	497
Selecting and Preparing Animals for the Show Ring.	497
Size, Shape, etc., of the Bone	498
Crowding Pigs for Breeding Purposes	498
Election of Officers	500
Age of Pigs at Fairs	500
Programme for 1891	501
State Fish and Game Convention	565
Topics for Discussion.	565
Governor Hovey's Remarks	566
Report of Fishing Interests of Michigan City.	571
Prof. Jordan's Remarks	573
President W. T. Dennis' Report.	587
Organization and Officers	589
Executive Committee and Members.	591
Resolution of Thanks	591

T

Timothy Hay	30
Timothy Seed	34
Tobacco	45
Trustees Purdue University	62
Treasurer's Report	78
Tipton County Report	373
Trotting and Pacing Horse Breeders—Proceedings.	471
President's Address	471
Secretary and Treasurer's Report	477
The Breeding Problem as it Relates to Our Own State	477
Trotting Horse Families of America	480
Officers Elected.	484

V

	PAGE.
Veterinary—Scholarship—Appointment	64
Vigo County Report	374
Vermillion County Report.	374

W

Wheat	44, 25, 18
Woman's Department, salaries, etc	62
Amount Premium	62
World's Fair	109, 66
Woman's Department, awards	140
Wabash County Report	375
Washington County Report	375
Wayne County Report.	376
Warrick County Report	377
Warren Tri-County Report	393
Wayne, Henry and Randolph Report	395
Washington and Clark Report	395
Wool Growers—Proceedings.	502
President's Address	502
Breeding for Mutton and Let Wool Take Care of Itself	504
Sheep Husbandry, management.	507
Are Sheep as Profitable in America as in England?	517
Sheep Husbandry as a Specialty	518
Programme for 1891	520
Report of Committee on Legislation	520
Resolutions	521
Governor Hovey's Remarks	521
"Sheep the Source of Divine Respect"	522
Less Wheat and More Wool	523
Sheep for the Average Farmer.	524
Silos and Ensilage.	525
Treasurer's Report.	529
Depression in the Wool Market—Effect on the Flock.	529
Officers Elected.	532
Resolutions	532

X

Xenia Union District Report	395
---------------------------------------	-----

